ATHLETIC JOURNAL

Vol. XXII, No. 6 February, 1942

What the Schools Are Doing

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DeWitt Portal

Advanced Parallel Bars
Hadley D. Price

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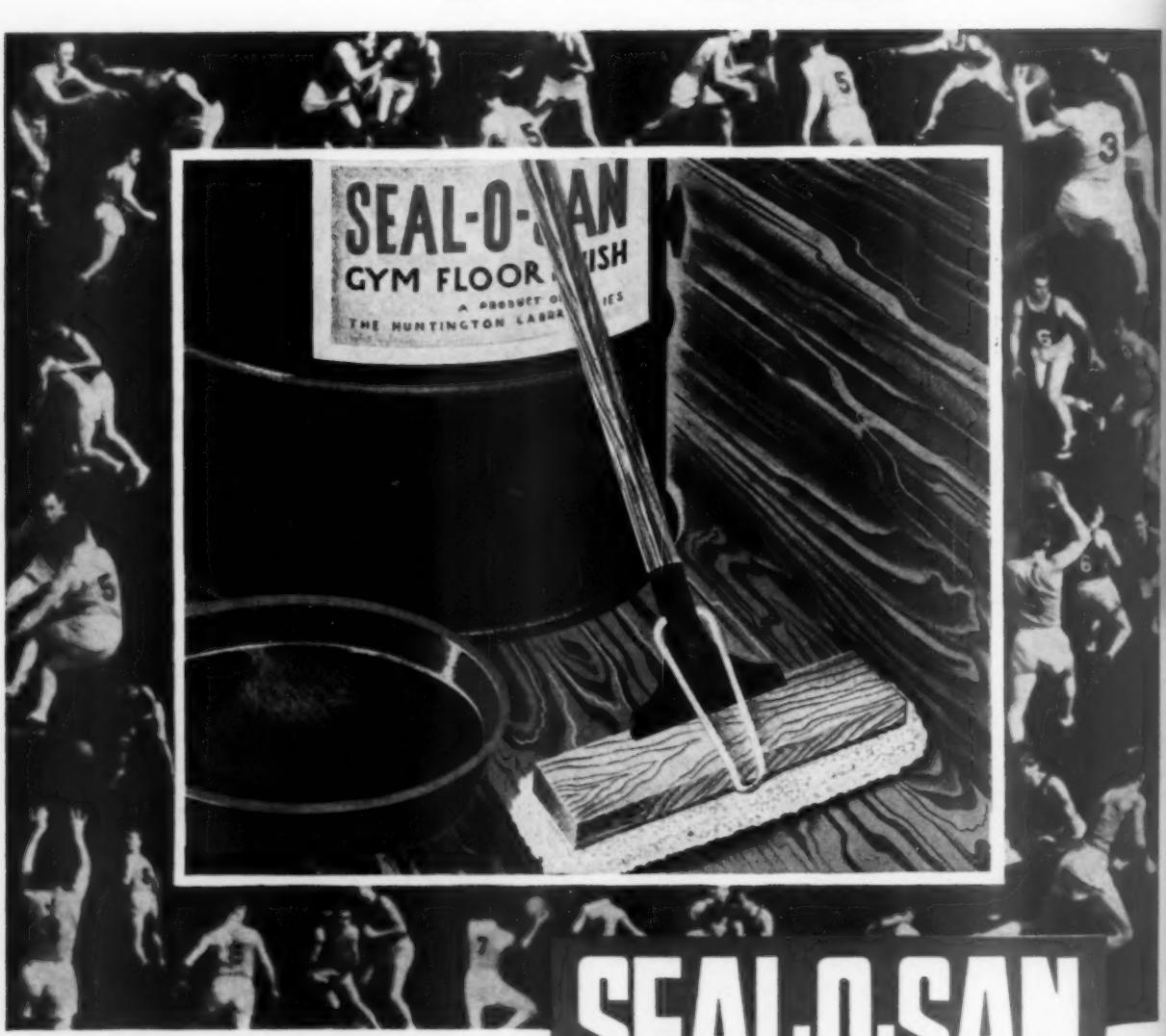

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VOLUME XXII

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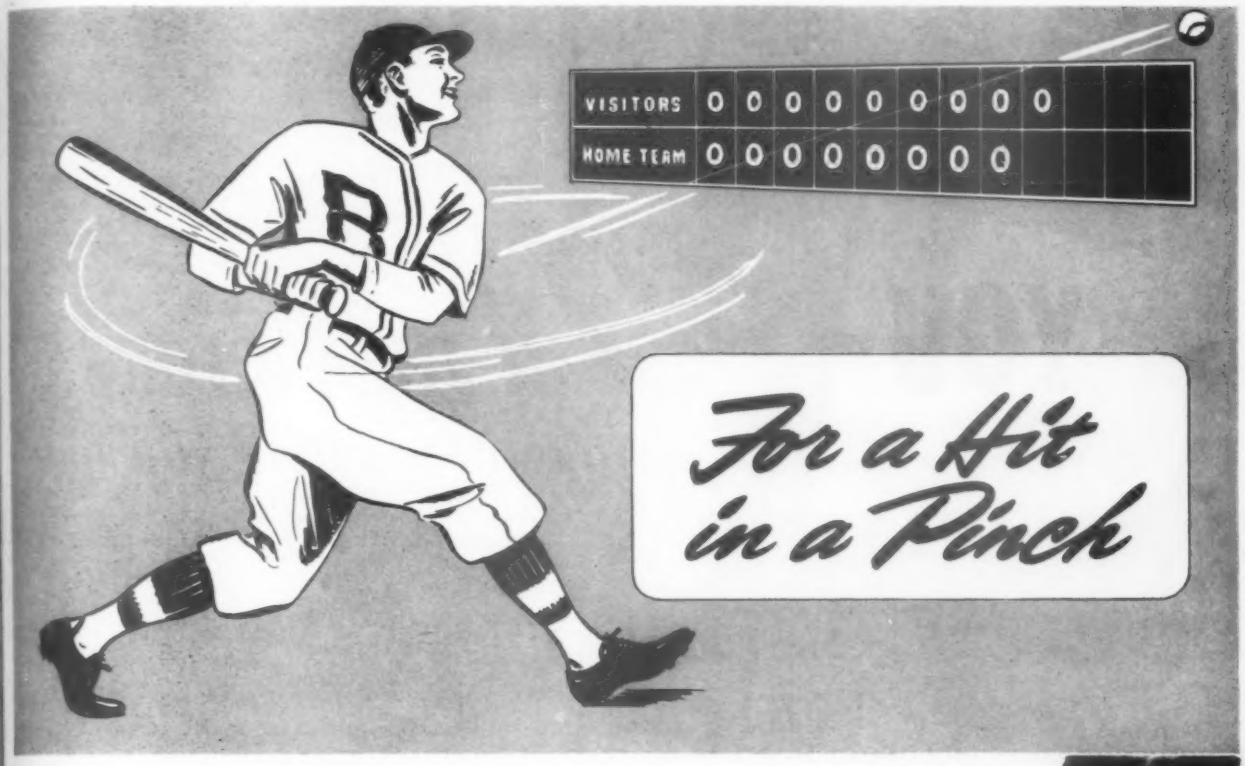

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What the Schools Are Doing

ALTHOUGH this publication has, since its founding, following the First War, continuously emphasized the value of athletics and physical education in terms of national defense, in June 1940 it began to stress with vigor the importance of sports in developing a physically-fit nation. A series of editorials last year pointed out the values from different angles. Addresses by President William Mather Lewis, Dean Christian Gauss, A. N. McMillan, and Morey Eby, were important contributions on the subject. In November 1941, as war came nearer, this publication presented thirty-five statements by men prominent in American life. Representatives of the army, navy, governors of various states, educators and athletic men presented their views on the need and value of athletics in our schools and colleges. Four more were presented in the January issue.

We come now to the very climax of our months of planning. We are at war. It is no longer what *can* athletics and physical education in the schools and colleges contribute in a national crisis; the question now is what *are* we contributing. We therefore present some concrete illustrations.

Ten-Point Program for Civilian Preparedness in the War Emergency in the College of the City of New York

By Joseph Bressler, President

Upon the advice of national leaders of health and physical education, the Hygiene and Physical Education Association of the College of the City of New York held a special meeting Monday night, December 8, 1941, at The City College to consider the contributions we might make to assist the successful prosecution of the total war effort of our country. Specifically we were most concerned with the immediate improvement of the physical fitness of our youth, whose health status has been revealed both by Selective Service statistics and our own tests to be inadequate to the demands of a war emergency.

The following ten-point program was unanimously adopted:

1. Increase in the physical education program to one hour every day for all men and women students during the entire course of study in all day-session divisions under the jurisdiction of the Board of Higher Education, including the high schools.

2. Introduction into the physical education curriculum, and intensified use, of activities designed to increase the strength and endurance of physically inferior students.

3. Continuation, expansion and intensification of intramural and varsity athletic programs.

4. Insistence on the immediate correction of remediable defects revealed in the medical examinations of freshmen and sophomores.

5. Extension of the medical services to juniors and seniors and insistence upon the correction of remediable defects within a stated limited period.

6. Immediate institution of adequate first-aid training for all students.

7. Curricular revision in Hygiene to provide increased instruction in social and military hygiene.

8. Extension of physical fitness and civilian preparedness programs to evening session students.

9. Utilization of facilities and physical education staffs on Saturdays and Sundays to provide physical fitness training to the members of civilian defense agencies, such as auxiliary firemen and air-raid wardens.

10. Institution of military training in addition to the foregoing program and not as a substitute for it.

Throughout, emphasis was placed upon the necessity of the addition of these recommendations to the present offerings in Hygiene and Physical Education if our youth is to achieve the state of health demanded for complete victory over the Axis powers.

Reports from the N.C.A.A. Meetings

At the annual meetings of the Small College Group held recently in Detroit, several members outlined, during the discussions, the contributions that their schools were making.

Penn State

By Dr. Carl P. Schott

This last year we gave the basic Red Cross first aid course to 340 students. On the sixth of January we will begin a short course in first aid which will be eight hours in length. The course will include a half-hour lecture and an hour and a half of practical work.

Teachers College, Columbia University

By Dr. W. H. Hughes

I think this group might be interested in learning about the experiment we are going to attempt this semester. We in-

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A WELL-ROUNDED

System Play Versus Free Play

By Ben Neff

Basketball Coach
Lowell High School, San Francisco

THERE are two basic schools of offensive basketball, the free-play school and the system-play school. The philosophy or theory of the free-play group is flexibility; the players select and make the plays to meet the defensive situations as they arise in actual play. The theory or philosophy of the system school is to set up a rigid, definite plan of action against the opponents' defense and to adhere to that plan.

Let me eliminate the too categorical objections frequently made to each system. Advocates of system teams say that free-play teams are wild-shooting teams. They need not be. The score and time of a particular game and the shooting philosophy of the individual coach control types of shooting. It is said, also, that free-play teams do not maintain floor balance. Too often the free-play team may find more than one player cutting for the basket at a time. An extreme situation finds a back guard with the ball and the other four players bunched in the free-goal area. No good free-play team utilizes free lance; a good free-play team utilizes freedom of choice of a definite offensive play and maintains floor balance. The free-play advocates claim that the system team can do only one thing and has poor continuity in play. It is extremely easy to defend against a system team. Good system

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Basketball Offenses of Interest
I. Washington State College

By John B. Friel

Basketball Coach

FOR several years at Washington State College we have been favoring a fast-breaking driving game. Our fast break is pretty much the conventional three-lane affair, with an attempt being made to get the ball out fast, and then into the middle somewhere around mid-court with one player ahead on each side. After the break is stopped we use a weaving offense, with four men swinging and one man in the deep-post position, or five men swinging into the weave, depending on the material at hand. If we have a man or two especially suited to post-position play, we use him that way, but prefer to keep the basket territory open for drives and cutaway maneuvers, if possible. The following are some of the maneuvers which we develop in order to get our shots. These maneuvers are set up in a constant movement of players, whenever and wherever the proper spacing arises. The passes most commonly used are the two-hand chest pass, the bounce, and the two-handed back flip.

We spend much time in developing the shooting of the boys, and feature the set two-handed shot, and the one-handed shot used around free-throw line territory—the latter either on the roll or going straight in. For driving shots we prefer the underhand lay-in. The points stressed on the one-hand shot are:

1. Continuous, smooth motion from the time of the pick-up to release.
2. Shot released with natural spin from

(Continued on page 14)

Advanced Parallel Bars

By Hartley D. Price

Varsity Gymnastic Coach and Director of Gymkana, University of Illinois

ADVANCED stunts on the parallel bars may be classified into: somersaults above the bar, somersaults below the bar, mounts, dismounts, balances, swinging tricks involving a change of direction.

Somersaults Above the Bars

Backward Somersault to a Support (Illustrations 1, 2, 3): In preparing for the back somersault to a support, it is necessary for the performer to get set in the handbalance position. He should strive to keep his arms straight and his shoulders slightly ahead of his hands. He should consider his shoulders as an axis upon which his body may turn. With the shoulders fixated and the arms straight at the elbow, he should swing vigorously through until he is almost forced to release the hand just previous to the final snap. A very important phase of this trick is to learn to sink somewhat in the shoulders, in order to obtain an extra snap for the throw. For exhibition purposes this trick may be performed four or five times in a row.

Front Somersault to a Support (Illustrations 4 and 5): In executing this trick the performer should keep the shoulders fixated slightly back of his hands. He should then swing freely from the shoulders with an exaggerated back arch. From this position he should throw and flex quickly and vigorously. The endeavor should be made to land approximately on the same spot on the bars with his hands. A quick gyrating motion of the hands is necessary in order that maximum height may be maintained and no time lost for the regrasp.

Somersaults Below the Bars

Somersaults under the Bar (Peach bas-

(Continued on page 22)

SPORTS PROGRAM

A Program of Mass Boxing

By DeWitt Portal
Boxing Coach, San Jose State College

THIS program of mass boxing is brief, but the principles involved may be applied to high school, college, or army and navy curricula.

The program should be so organized that every man will have an opportunity to receive a limited amount of elementary instruction. As an added incentive, novice, junior and senior tournaments and competitive dual meets should be arranged for those men who care to participate in competition. Competitive boxing should be elective.

The instructor should recognize that boxing is a habit sport, and when the fundamentals are executed, various automatic reflexes will be the result. It is well for the instructor to teach and demonstrate each drill properly, thus making it possible for the student to learn the drill correctly. The execution of all bad habits should be discouraged.

The drills that follow are in progressive order, starting with the simple and most basic fundamental and gradually increasing in difficulty. In teaching, the instructor will get better results if each fundamental drill is broken down into units. When the individual steps have been mastered, the parts should then be combined.

Many boxing programs fail, because the competitors are allowed to box at full speed, before they know how to box, and while they are poorly conditioned. There should be no hurry. Better results will be realized eventually, if the boys are first taught the fundamentals. After they have mastered some skills, they may be permitted to box with certain restrictions. At this stage, it is well for the instructor to allow one boy to use only the left jab, feinting a single jab, or in series, to the head or body. His partner may concen-

(Continued on page 8)

About Fencing

By Wm. F. Strobel
Wm. Howard Taft High School, New York City

THE word fencing, which in its broader sense and in its derivation, means self defense, fighting, came from the Sanscrit-"carma." It meant in all the languages throughout the development of speech, the skill to use devices with which to fight. As man developed, so the devices, with which he fought to survive, developed. He augmented the use of his hands, legs and teeth with various implements, from the throwing of objects, the hewing out of clubs, the fashioning of swords from wood and then from metal, to the present-day use of all that science has helped perfect.

The narrower understanding of fencing now limits itself to sword play which, from our knowledge of the ancient Greeks, consisted mainly of hacking at each other at close quarters after attempts with the throwing of the spear failed to bring about the desired result. During the period of the Roman Empire improvements in the construction of the sword, and with it, of the armor took place. The technique of its use remained the same; heavy-handed slashing.

An indication, however, exists, that the gladiators who entertained the public during Roman holidays by fighting wild animals or each other with swords, were trained by teachers known as Lanistae—the first known fencing masters.

The overrunning of the Roman Empire by the Teutonic hordes gave the sword a new role. The Germanic tribes used the weapon in attack and defense of their ideals and looked upon it as a faithful companion. From this attitude sprang the age of chivalry and the custom of bearing a sword only by the knighted. In the literature of this period we are

(Continued on page 43)

A Suggestion for Staging Dual Meets

By G. L. Duke
Director of Athletics, Grinnell College

TRACK and Field has long been recognized as one of our great sports from the participant's point of view. With its varied program an opportunity for competition is offered for most every type of individual. As compared with some of our sports, the cost of carrying on the track and field program is not great. This may be one reason why track coaches and athletic directors have been lax in presenting the sport from the point of view of spectator appeal. With the exception of some of the larger meets, only the contestants have been considered by the management. As a result of this attitude, attendance and public interest in the sport are on the decline. This lack of interest by the public, particularly in our student bodies, is having its effects on the sport. The American boy likes to perform before a crowd; and will perform better. It behooves the track coaches of America to do everything they can to educate our public as to the value of track and field athletics, and to make the meets interesting. One of the best ways to do this is to stage our meets in the shortest possible time and in such a manner that all events may be watched and enjoyed by the spectators.

Last spring in our dual meet with Iowa State College, we tried a plan which proved very popular with both spectators and athletes. We make no claim for

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A Program of Mass Boxing

(Continued from page 7)

trate on a few defensive moves. Later both men should be permitted to use the jab only. The next step is for the instructor to allow one boy to use the jab or hook in single units, or in series, and later let both men jab or hook at the same time. They should keep the right hand as a defensive weapon.

The final step is for the instructor to designate one man to jab, hook or use the right hand, while his partner is on the defense and later allow both men to use these blows. They will be boxing, but under control. Heavy hitting should not be permitted.

The instructor should always encourage the men to work lightly. They should work as partners and help each other. He should encourage men to select a partner about the same height, weight and ability. Occasionally, the instructor will make changes, but the men will usually pair themselves rather evenly.

When the men first begin to box, the instructor should stop them frequently and make general criticisms. Such short intervals of boxing will tend to control the tempo of activity. As the partners gain confidence in one another, and as they begin to relax, the period of boxing may gradually be lengthened from thirty seconds to two minutes.

In teaching the elementary fundamentals of boxing, the instructor can handle fifty, a hundred, or a thousand men at one time, if the proper equipment and facilities are available.

In the early stages of instruction, formalized group drill is recommended. As the men acquire skill and finesse, the group should be broken down into smaller units. When men have entered the advanced stages of boxing, a certain amount of individual instruction is necessary because of obvious individual differences.

For large group instruction, such as army use, a platform, a public address system, two assistants to demonstrate the blows, a pair of gloves for each student, and a large gymnasium, play area, or an open marching field are the necessary facilities and equipment.

Large sections should be so organized that men of like size and ability are grouped together. These men should be organized or classified into groups I, II or more if necessary.

The instructor should use a set of commands to which the group will be able to respond easily. Example: Group I, Advance—Retreat, or Group I—Blows one, two and three. Ready one-two-three.

It is well, first, for the instructor to describe and demonstrate a certain drill clearly. Then, have the men drill as a unit by formalized commands. Criticisms and suggestions should be made at the conclusion of each drill, and before the next fundamental is introduced by the instructor and assistants.

For army and navy use, the instructor should endeavor to co-ordinate his boxing terminology with army and navy nomenclature, when possible.

The Necessary Fundamentals

The first sixteen illustrations referred to below appeared in the January issue.

In the teaching of position, the instructor should start with the feet and work anatomically up to the head.

Feet: (The terms front foot and rear foot will be used so "south-paw" boxers will not be confused. Ordinarily, the front foot is the left foot.)

The distance of the feet apart will vary with the height of the man, but twenty-four inches to twenty-six inches is good. The rear foot should not be directly behind the front foot; it should be about ten inches to the right, in order to give the man lateral movement. There should be a balanced four-point foundation in order to permit the man to advance, retreat, slip or duck to the right or slip or duck to the left.

Both feet should be pointed diagonally forward. Most beginners have a natural tendency to point the right toe sidewards or at right angles to the front foot. This fault later proves to be a serious handicap to good footwork.

The front foot should be flat on the floor (heel touching) with the weight carried on the ball of the foot. The rear heel should be off the floor. Illustration 3 (January issue) demonstrates good feet and knee position from a partial front view.

Knees: Both knees should be slightly flexed to permit the boxer to snap, kick or shuffle forward or backward without a preliminary movement which constitutes a telegraph. Most beginners have a tendency to stand on straight legs and thus are forced to develop a telegraph that will seriously effect their boxing success.

Torso: The body should be turned sideward and thus offer the opponent a small or narrow target. For orthodox boxers, the hip bone and the left shoulder should be nearer the opponent, than the right hip and shoulder. This position gives the chin a natural defense, because of its relative position to the left shoulder.

This sideward position puts the left shoulder and left fist near opponent where it can be used advantageously. Most orthodox beginners have an inclination to stand broadside because of a natural desire to use their right hand. The body should be slightly bent at the waist. The hips should protrude backward a little. Illustration 2 shows good stance from front view. The body should be slightly flexed at the waist.

Left Fist and Arm: The left fist or glove should be about shoulder and chin high, so that it is a constant defense for the opponent's straight right to the chin. This is the best position from which to jab. The fist should be closed, but not clenched, in order to have arm relaxation.

There are two accepted methods of holding the first. Many old-time boxers hold the fist in such a position that the palm is downward, horizontal to the floor. The most popular method of instruction today favors the method of holding the palm inward, much as a person would in clapping hands. This latter method is recommended here as a man's hand is in a similar position, when he holds his gun for bayonet fighting.

When the fist is held with the palm in, as suggested, the left elbow is forced into proper position through necessity. The elbow should be in front of the ribs, to protect the boxer against the opponent's straight right to the body.

The left fist or glove should be held about eight to ten inches from the left shoulder. Many boxers have a tendency to extend the left hand which often forces the man to retract the hand a little before jabbing. This constitutes a common telegraph.

When the left hand is constantly extended, the arm will soon become weary and thus the boxer will lower it for rest. Although some boxers are successful with a lowered left hand, the habit is not to be recommended for beginners.

The left hand should be held in place in a loose relaxed way. The weight of the forearm should be carried by the leverage of the elbow, when in a flexed position. Illustration 1 shows good stance, body balance, and position of the left hand. Note that the pole in the rear goes through the center of the body.

In forming a natural fist, the thumb should curve down and around between the first and the middle fingers. The thumb knuckle should be flexed and thus prevent the tip of the thumb from protruding. A well-formed right fist is illustrated on the opposite page.

Odd as it may seem, it is impossible to make a natural fist on all gloves, made at the present time, that have a separate covering for the thumb. A thumbless glove which permits a man to make a natural fist is shown on the opposite page. Note the extra padding over the inside of the thumb.

The Right Fist and Arm: The right fist or glove should be just below and touching the chin. The glove should not be in front of the chin, a distance below

the chin or to the rear of the chin. As a reminder, the coach can instruct the student to rub his nose or chin. This habit will train the man to keep his right hand up.

The palm will be facing the neck and not downward. The knuckle of the little finger will be nearest to the opponent's chin. The forearm will be perpendicular, not horizontal. When held in an upright position, the elbow will act as a natural defense for a left hook to the solar plexus.

The Head: The neck should be contracted rather than extended. The chin should be down and behind the left shoulder. The beginner should rub his chin with his left shoulder. This habit will act as a constant reminder for men who have a tendency to box broadside.

Upon what part of the opponent's body should the eyes be concentrated? No matter upon what area of the body, the eyes are centered, through split vision, all moves will be registered. For this reason it is better to concentrate on opponent's eyes, as he will often telegraph by first looking at the target he intends to strike. Furthermore, fear, anger, and other emotions may be detected by watching the opponent's eyes, thus allowing the boxer to make wise counter-moves.

Footwork: Proper footwork is the least emphasized and the most important of all fundamentals. By a skillful, untelegraphed advance, a man may maneuver in offense to a position whereby he may score or he may artfully retreat and protect himself in defense. The success of a boxer's offense or defense depends upon his relative position to his opponent.

There are four directions in which a boxer may move; he may advance forward in attack; he may retreat backward in defense or counter punching; he may side step to the right or to the left for slips, or for maneuvers for better position.

The two side steps are used more in advanced boxing and need not be stressed as much as the advance and retreat.

In executing the proper advance, the boxer should always slide, lift or shuffle the left or front foot first and then draw up the right foot, simultaneously or soon after. A boxer in attack should refrain from leaving the front foot in position and from overreaching in jabbing or hooking, as he will automatically put himself off balance (Diagram 1).

The same principle is involved in the retreat. The rear foot is moved, or lifted first and the kick, the push or the snap will come from the front foot simultaneously or soon after (Diagram 2).

In the side step to the right, the mechanics are the same. The right foot is moved first, the body is turned to the right and then the left foot will push the man to the desired position where he will face left again (Diagram 3).

The left foot is lifted first in the side step to the left; the body is turned to the left and the right foot is swung around to the left, bringing the boxer to the proper position (Diagram 4).

The Left Jab: Geometrically we know that a straight line between two points is the shortest. The closest glove to an opponent is the left, and it, therefore, follows that the quickest, safest, and simplest blow to execute is the left jab.

It is important that the novice boxer knows the purpose of the left jab. This straight left hand thrust is not a knockout blow. By the addition of several successive jabs or by the combination of feints or hooks with jabs, the opportunities for use of the left jab are many.

There are two fundamental objects of the left jab: One, to put the opponent on the defense, either by putting him off balance or by consuming his attention; Two, simultaneously with this thrust, the offensive man has moved in such a relative position, that he may follow up his opponent with a heavy attack.

A good jab is the fundamental entre to an effective offense. This blow has been the deciding factor in many contests. The jab may also be used as a defensive weapon, as it is possible to keep the opponent at a safe distance by extending the jab, as he attacks.

The right hand of a correctly formed fist.

A new thumbless boxing glove, designed for army, navy, intercollegiate, A. A. U. and interscholastic training and competition. Advantages—extra padding over thumb knuckle area prevents injuries incurred while hooking. Removal of individual thumb aperture prevents eye gouging, heeling, holding and hitting, and reduces amount of clinching. This glove prevents needless injury and tends to offer cleaner and more skillful action for the spectators.

The degree of deception and skill of execution are the two factors that will determine the success or failure of this blow. If a boxer has no previous knowledge of when a jab is coming, and if the jab is well executed, it will be successful thus gaining an advantage for the man who jabbed, and, at the same time, placing this man in such a position that he can follow up this opening with a sustained attack.

Unfortunately most beginners are not particularly interested in footwork or the left jab. Many novices pull back their left hand in an attempt to hit harder, but this constitutes a telegraph. Other beginners have a tendency to use their natural hand—their right.

If the isolated elements or fundamentals of the left jab are taught in their proper order and then are molded together into a well-executed, untelegraphed on-balance position, the instructor can feel that the boxer is over the first big hurdle and is on his way to a successful boxing career.

Illustration 4 shows a good left jab with the proper footwork. Note that the left foot is slightly raised.

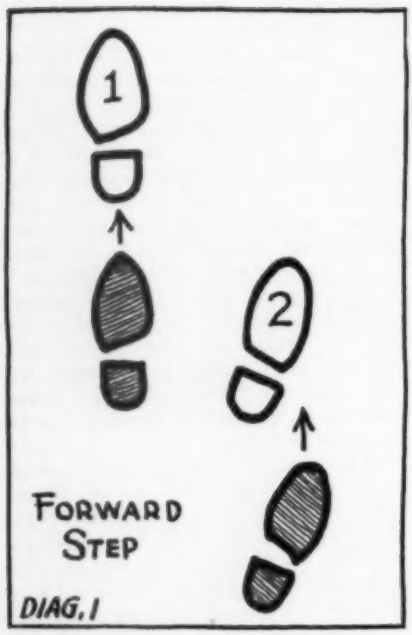
Illustration 5 shows an incorrect advance. The front foot has remained in position and the man has overreached.

The Straight One-Two: (Illustrations 6-9, January issue). The straight one-two series is the oldest, simplest and most basic combination of offensive boxing.

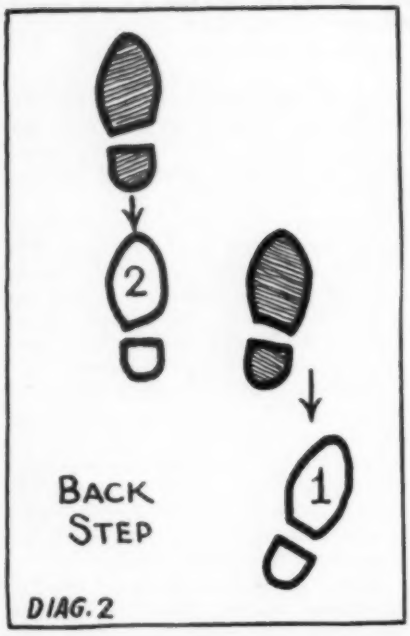
There are many combinations of two, three or more punches that can be used in a sustained attack. The ultimate success or failure of a sustained attack will depend upon the man's ability to move and hit in good form rapidly.

For example, the jab of a straight one-two series, will force the opponent to make a defensive move. If the offensive man has moved into proper position on the jab, while the defensive man is consumed with the defensive problem of the jab, the straight right hand should be very rapidly thrust at the chin of the defensive man, before he has had a chance to recover from the jab. If properly executed, the offensive man should be in good position at the finish of the right hand so that he could continue to move and hit with other left and right-hand blows, thus forming a sustained attack which is an accomplishment realized by only a few. Most boxers at the finish of one or two blows are so badly out of position and off balance that they find it impossible to advance, even though there is an obvious opening.

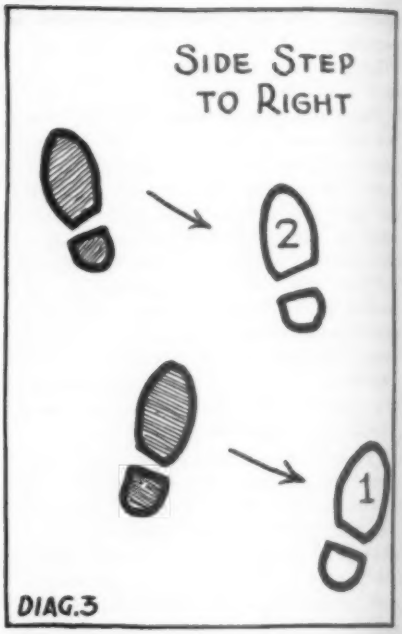
In the early stages of teaching the straight one-two, the problem of the rapidity of the two blows must be ignored. After the men have realized some skill with the left jab, they should be paired close to each other with their left toes touching. It should be pointed out that this is the approximate distance of two



DIAG. 1



DIAG. 2



DIAG. 3

men at the conclusion of a left jab.

Since a new habit pattern of the right hand is about to be introduced, the men should move their right hands from their own chins, straight toward the opponent's chin in slow motion by command. As the men progress in skill, the tempo should be increased. Illustration 10 shows the two men in a toe-to-toe position with the man in white executing a slow, straight-right hand to the chin.

The next teaching step of this series is the combination of both blows in isolated steps. For example: the men are paired and on guard. The boxer in white, at the command "Jab," will execute his best left jab, while concentrating only on this movement. The instructor should allow a long pause at first. He may give the command "Check-balance."

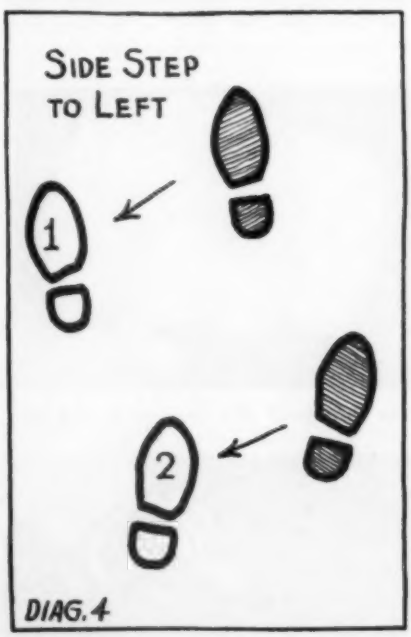
On checking, if the boxer in white notes that his jab was properly executed, he will find that his relative position is about toe to toe with his opponent. The pause will then give him time to concentrate on the execution of the right hand.

Throughout the duration of the course, the tempo of this drill should be increased until the men are delivering the desired one-two series in rapid succession.

This same formula of isolating the component parts of a blow or series of blows should be followed by teaching the left hook and other more advanced movements.

The defensive man should block both of these blows with his right hand. At the moment of contact, the glove should be raised slightly in front of the chin. The arm should be flexed to take the shock. Reaching for the blow is a dangerous habit and should be avoided.

Illustration 11 shows the boxer in white



DIAG. 4

starting his right hand after successfully putting the boxer in black off balance with a jab and simultaneously getting into the proper position.

Left Hook: The first step in teaching the left hook is to have the men stand at the approximate toe-to-toe position. The two men should not touch toes as in the one-two drill; their left foot should be from eight to ten inches to the left of the opponent's left toe. This position will afford a lateral foundation which is desired in executing a left hook.

Standing in this close position, the boxer in white, in slow motion, should drop the left hand and shoulder toward his opponent's crouch. The fist, arm and shoulders should then be rotated to the left, thus maneuvering the fist to a lateral plan from the right side of opponent's chin. The arm and torso should then be rotated as a unit to the right.

The arm should not be moved as an individual unit separate from the body as it will lack force. This swinging lateral motion of the arm should be slightly upward toward the chin. The elbow should be lower than the fist in the execution.

Illustration 12 shows this preliminary movement.

The defensive man should block this blow with his right glove. He should raise his glove slightly upward and a little to the right. The arm muscles should be stiffened to take the shock, as well as to dissipate the force of the blow. The defensive man should not move away from the blow as he will place himself off balance and vulnerable to the opponent's right hand. If anything, the defensive man should lean toward the left hook, to off-set the penetration of the blow.

After a few short-range, slow-motion drills of the left hook, the men should deliver the blow from boxing distance. This blow should be executed in two parts: First, by stepping in and second by hooking. This drill should also be done by command and under control.

After a fair degree of skill has been realized, the men should then practice a left hook in one motion, concentrating on the elimination of all faults and telegraphs.

A left-jab feint and a right-hand feint should be introduced here to precede the left hook. The left hook to the solar plexus, like the left hook to the head, should be preceded with a feint.

Illustration 13 shows boxer in white feinting with a right to his opponent's head. This feint places the boxer in black on the defense and White is now in an

excellent position to deliver a left hook to the head.

Left Hook to Solar Plexus: This blow is similar in many respects to the left hook to the head. The footwork is very similar. The men should step in a little wide laterally to the left. The blow can be described as a mixture between a left hook to the head and a left upper cut. The palm of the closed fist is facing upward and the path of the blow is upward and inward as shown in Illustration 14. In order to block this blow Black should move his left forearm forward so that the blow will be taken on the right elbow. Illustrations 13 and 14 show White feinting to the head with a right hand and thus is in a good position to deliver a left hook to the solar plexus.

In the execution of the double hook, it is important that the left fist and shoulder be rapidly withdrawn at the completion of the solar plexus blow. The offensive man will then be in a position to rapidly deliver a left hook to the head. These two blows should be delivered in rapid succession. The left hook to the head will lack force and penetration, unless the left arm is withdrawn and cocked at the completion of the solar plexus punch.

Parries: Of the many parry combinations, only two of the most effective will be presented here. The outside parry is particularly effective for use against a man with an extended left hand, or it may be used successfully against an obvious jab. In the execution of this fundamental, White parries Black's left lead outward with a left hand and is in an excellent position to counter with a straight right to Black's head as shown in Illustration 16.

Parries are used most effectively against men who overreach or who fail to step in when jabbing.

Slips: In order to clarify the difference between slips and ducks, it may be said that a boxer slips straight blows and ducks swinging blows.

Slips are used effectively as counter moves against left-jab leads. After slipping outside to the right, a man is in an excellent position to counter almost simultaneously with a left hook or jab to the head or body. He may slip outside and use a delayed right hand counter to the head. Illustration 19 shows White slipping outside Black's jab and countering with a jab to his head.

The outside slip is the easier to learn and far less damaging or dangerous to either man. This slip should be taught first. Illustration 20 shows White slipping outside Black's jab and hooking to the solar plexus or head.

In executing an inside slip, a man should move his head slightly to the left allowing his opponent's jab to barely miss his right ear. A right-hand counter-punch is most effective and it may be a straight right to the body as shown in Illustration 20 or a right cross with the thumb down and the elbow high as shown in Illustration 21.

A man may slip inside and deliver a delayed left hook to the solar plexus or to the head, but this combination is not as fast as a right-hand counter-punch.

After the initial slips and counter blows have been taught, subsequent follow-up blows should be encouraged, as a man is in an excellent position to follow up with a sustained attack, as shown in Illustrations 19, 20, 21 and 22.

It is important that a man who slips has a good lateral foundation to allow movement of the head, without forcing the rest of the body off balance.

In slipping a man should keep his eyes open and move his head laterally, just enough to have the opponent's jab go by either left or right ear.

Slipping and ducking are recommended for short, stocky men.

Ducking: In ducking a left-hook lead, a man has a tendency to duck down to his right, thus going toward the incoming

In Illustration 17, Black has failed to slide his left foot in, and as a result is about to place himself off balance by overreaching. White has pulled back out of reach and is in an excellent position to counter with a right cross.

Illustration 18—Black has started to lead with a left jab which was telegraphed. White has beaten Black to the punch with a left jab. In executing this fundamental, it is important that White protect his chin with his right hand as he slides his left foot forward and simultaneously moves his head forward. This fundamental requires a cat-like reaction; it is very effective as a defense as well as an offense and creates many follow-up combinations.

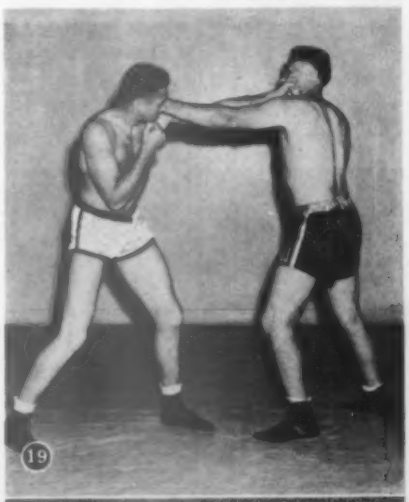
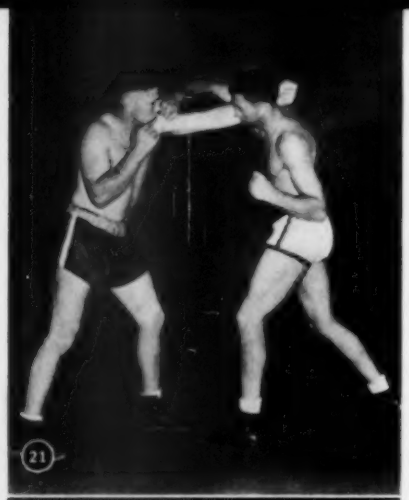


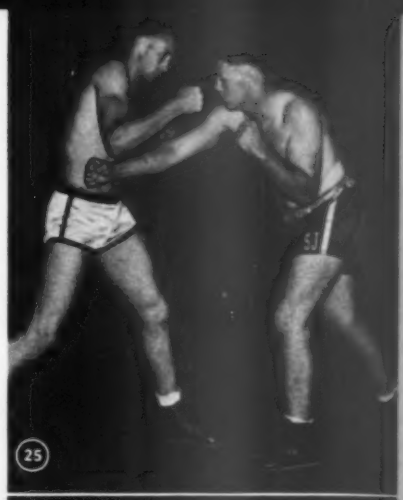
Illustration 19—Black has led with a left jab. White has slipped outside, by moving his head slightly to the right, thus allowing Black's jab to pass close by White's left ear. Simultaneous with this move, White has countered with a straight jab to Black's chin. White should have a wide four-point foot foundation to permit lateral movement of the head which will prevent loss of body-balance.

Illustration 20—White has slipped outside of Black's left jab. In so doing, he has dropped his left shoulder back slightly and is in an excellent position to counter with a left hook to either the head or plexus.



blow, but it is more effective if he moves his head with the blow to his left. At the same time, he should go down, by flexing his knees, and, then, by rotating his shoulders and head to the right under the overswung left hook. He is in a good position to counter to the solar plexus with his own left hook, as shown in Illustration 31.

Although right hand leads are infrequent, the same principle is involved. A man should first go to the right with a right-hook lead. The man should then go down, by flexing the knees and by rotating



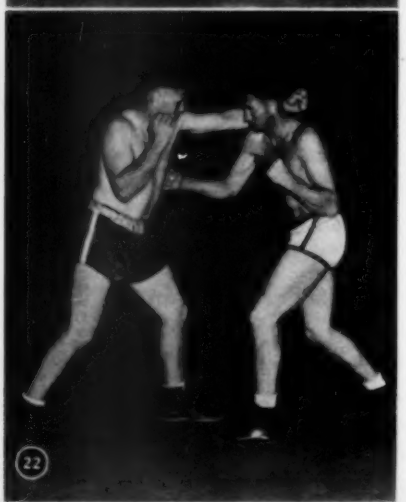


Illustration 21—White has slipped inside of Black's left jab, permitting Black's left to pass close by White's right ear. Simultaneous with this move, White has delivered a right cross to Black's chin. In the execution of this blow, White's right elbow should be high and thumb knuckle down. This blow is not a hook; it is more of a straight blow. White is in a good position to follow up with a left hook or to pin Black's right hand.

Illustration 22—White has slipped inside of Black's jab and simultaneously has countered with a straight right to the heart. It is important in slip movements that the eyes be kept open.

The following seven illustrations demonstrate some of the fundamentals that may be executed should an opponent lead with his right hand.

Illustration 23—Black has led with his right hand. White has dropped his left hand slightly; he has tucked his chin down and in behind his left shoulder, and is in the act of rolling his left in to his right and slightly upward. This rolling movement will protect White from Black's right hand and will have a tendency to throw Black off balance. From this off-balance position, White can counter effectively with his right hand.

The next two illustrations, 24 and 25, demonstrate the same fundamental. In Illustration 23, Black has started a right-hand lead, and simultaneous with this move, White has started to kick back out of range. Note blurr because of the action in Black's right hand and White's right foot. White is executing the correct retreat by raising the rear foot first.

Illustration 25 shows Black off balance, because White has stepped back and forced Black to miss his right-hand lead to the chin. White is now in the act of countering with a straight right to Black's chin.

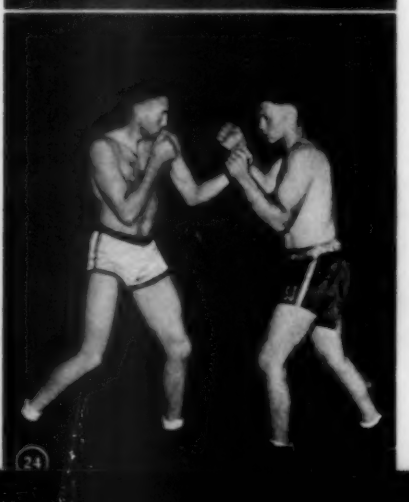


Illustration 26—Black has led with a swinging overhand right hook. White has blocked this blow with his left forearm and is about to counter with a right upper-cut. White can also step back from this blow and counter with a right upper-cut.

Illustration 27—Black has led with an overhand right. White has parried this blow by extending the left hand. This defensive movement will have a tendency to put Black off balance. White is in a good position to counter with a right hand.

In Illustration 28, Black has started a right hand lead. White has beaten Black to the punch with a straight left, and thus put Black off balance and made him ineffective. White is in good position to counter-punch.

the shoulders and the head to the left. He may counter with a right hook to the plexus as shown in Illustration 29.

In both of these ducks, the head makes a circular movement and goes under the opponent's swinging arm. As in slips, subsequent combination punches should be encouraged.

(Continued on page 42)

29

Illustration 29—Black has led with a swinging right hook. White is in the act of ducking and is about to counter with a right to the plexus. He will then be in a position to follow rapidly with a left hook to Black's head. In executing this duck, White should first start with the blow to his right; then he should go down, by bending his knees and then rotate the body to the left. It may be advisable for him to move his left foot slightly to the left to catch his balance.

The next six illustrations, 30-35, demontrate some of the fundamentals that may be used when an opponent leads with a long-range left hook.

30

In Illustration 30, Black has started a telegraphed long-range hook to the head. White is in the act of ducking this blow and will then counter with a left hook to the plexus. Note that White has started with the blow; he will then go down and in, by bending his knees. Note also, that by the rotation of the torso, White's left shoulder is back which put him in a good position to deliver a left hook with force.

31

Illustration 31 shows Black's left hook about to go over White's head and White's counter hook to the plexus is about to score. In delivering this blow, it may be advisable for White to move his right foot slightly to the right in order to keep his balance.

Illustration 32—Black has led with a long-range hook which White has blocked with his right forearm and simultaneously has beaten Black to the punch with a left jab. In order to execute this fundamental effectively, White must move his head and weight toward Black.

32

Illustration 33—Black has led with a left hook. White has kicked back, forcing Black to miss and lose balance. As White kicked back, he also dropped his left shoulder back. White is now about to counter with a left hook to Black's chin.

33

Illustration 34—Black has started a wide left-hook lead. White has beaten him to the punch with a straight inside right to the chin. This is the punch that Max Schmeling used to defeat Joe Louis in their first encounter.

34

Illustration 35—Black has started a long-range left hook to the head. White has blocked this punch with his right forearm and simultaneously has pinned Black's right hand. White is now in a good position to counter with a straight right to Black's chin.

35

Illustration 36 shows a good defensive infighting position. White is to the side of Black, so that their left shoulders are touching. White has Black's left arm helpless under his right arm. White's left arm and forearm protect his body from Black's right hand. White's head is bent forward to the right and thus Black does not have a legal head punch. White's legs are well spread and his knees are flexed, thus giving him good foundation and defensive position.

36

Basketball Offenses of Interest

(Continued from page 6)

the ends of the fingers at the top of a full reach.

3. Wrist action, with a slight break at the pick-up, moving into a smooth wrist cock during the shot, with the palm always down after the finish.

4. Coming out of a roll, the player must turn in, reaching directly toward the basket at the finish.

This form makes for a fast shot, which can be used at the least opening, and a shot that amounts to wrist, hand and finger control.

What to Stress in Set-Shooting

All shooting is most accurate if the arms and hands are as nearly as possible divorced from the body in the movement, and the hands and fingers given free play in the actual propulsion and control of the ball. A full-reaching finish is essential to standardize the shot, and to insure the greatest guidance and control. In set shooting we stress the following points: 1. Loose finger grip. 2. Shot made practically entirely with wrists, the arms and body merely accommodating the shot. 3. A flowing, accelerating motion from the preliminary breaking of the wrists to a full reach and follow-through. 4. Release with some degree of back-spin, insuring finger control. 5. Complete body relaxed with feet close together either even or in stride.

I might add that there is no attempt to change boys who are good shots, until after observation it becomes evident that slight changes may bring about improvement. There are few cases in which boys do not need some help, and few cases in which it is not necessary to constantly check on shooting form. I believe that shooting slumps are, to a large degree, caused by an unconscious loss of shooting form, and that a coach has, as one of the greatest aids he can give a team, the duty of constantly checking on this important item with each individual.

In Diagram 1: Three drives with a penetrating dribble toward the guard of 3. Three comes to meet the pass and, upon receiving it, continues to dribble either immediately or after a momentary set. He drives at the guard of 1. The latter starts early and, upon receiving the back-flip, from 3, either sets or rolls for the basket, taking a one-hand shot or driving on in, if possible.

Diagram 2: Two penetrates with a dribble toward 3's guard and flips back to 3. The latter drives on a dribble at the guard of 1. One fakes out and cuts back, receiving a bounce or hook. This has been one of our most effective maneuvers.

Diagram 3: Three penetrates on a dribble toward the guard of 4. Four drives on a dribble toward the guard of 2 who starts early and sets, as he receives a back-flip from 4. This is used against receding defenses and results in shots.

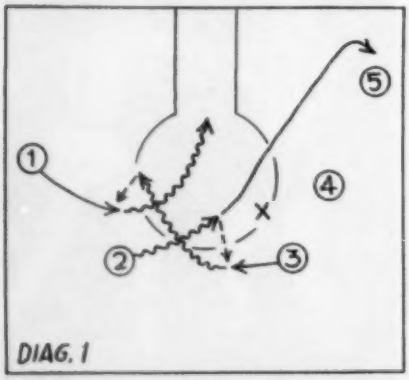
Diagram 4: Two drives toward the guard of 3 and flips back to 3, who drives toward the guard of 1 and flips the ball ahead to him, then fakes a screen and cuts toward the basket. One, upon receiving the ball, fakes a dribble and raises the ball above his head for a two-hand overhead pass, in case 3 is clear. This is used against teams who are changing men on our screens.

Diagram 5: Two drives on a dribble toward the guard of 3. Three, upon receiving the ball drives with a dribble toward the guard of 1, and after a slight change of pace, continues to roll for the basket, rather than flipping the ball back to 1. This maneuver is used sparingly and only after it has been set up by a continuous use of the back-flip and when the spacing is right.

Importance of Shooting and Driving

It is my belief that the two most important offensive fundamentals of the game are shooting and driving. Consequently, we spend much time and place much stress on these phases of the game. The old saying that, "Good shots are born and not made," is a weak answer to a coach's most vital problem, because shooting can be taught and most boys can become reasonably good shots or better, if given the needed help.

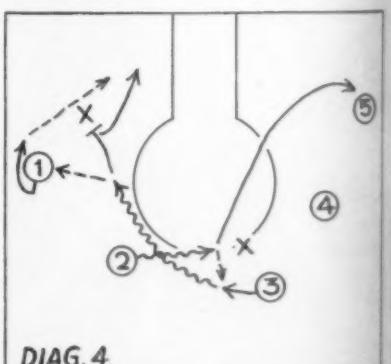
Our game as a whole allows a great deal of freedom in shooting, because it is impossible to get the best results in shooting, unless the boys are constantly shooting-minded. This means that at times there will be a problem of getting the boys to earn the best shots they can secure, but they can usually be brought to this by "no shooting" one-end drills of short duration. I would much rather have a club err on the side of too much freedom, rather than get the mental attitude of fearing to shoot, because of what the opponents might do with the ball.



DIAG. 1

DIAG. 2

DIAG. 3



DIAG. 4

DIAG. 5

In playing against zone defenses we use an entirely different method of attack. The following principles are stressed:

1. Constant, fast passing with fake shots and more passes and eventually fake passes and shots.
2. Slow break with the plan of making the opponents do all the running and ball chasing until the shift is demoralized.
3. Only the best of shots taken.
4. Standing one-handed and set two-handed shots are favored.

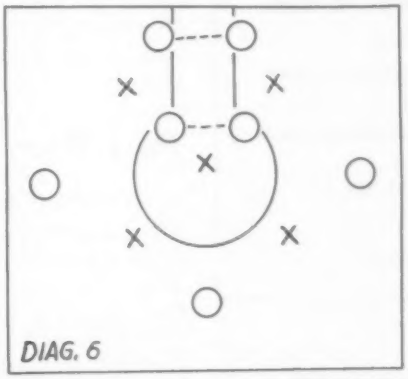
Against the different zones we use the set-ups, shown in Diagrams 6 and 7.

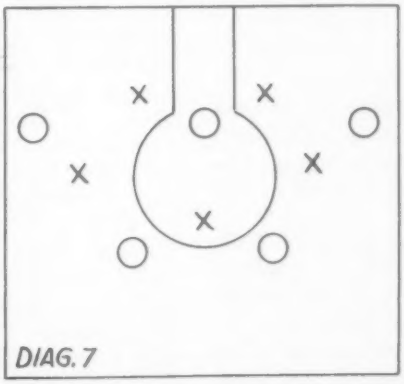
We also have on tap a combination offense to use in case an opponent employing a zone attempts to spot our players man for man and still keep in the zone. This becomes a checking defense, and it is then necessary to move out of set positions and do some cutting and changing of position with constant passing, but with less drive than against any man-for-man.

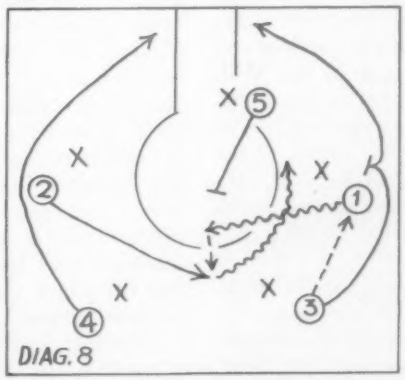
With the free-shooting game which we play, it is necessary to stress defense, because we are going to give the opponents the ball many times, and we must play the defense well, if we are to win any of the games where our shooting temporarily slumps. We use an assigned man-for-man defense, changing only on effective screens. We have specific defenses for every conceivable type of screen, and practice these in drills earlier in the season, as well as when we are preparing to meet scouted opponents. Against the opponent's break, we retreat fast, as soon as the ball is lost, with the first two men back playing the basket zone, and the last three coming fast down the middle, attempting to stop any dribbler or to intercept cross-court passes. Against delayed offenses, one of our main objectives is to keep the ball out of deep free throw line territory, and to do this, we play to the side and ahead of passed men, and lead opponents who are attempting to cut across to meet the ball inside. In these cases, we constantly play for interceptions. A considerable number of our defensive drills are designed to develop this phase of our defense. We seldom use a full-floor, forcing defense, unless behind late in the game. On rare occasions we have played zone, both 3-2 and 2-1-2, but this is not a standard practice. On defensive rebounds, we attempt to cut out opponents in rebound territory, using our outside defensive men to fill in for possession of the ball when necessary.

We substitute freely since the tip-off elimination, because this practice has seemed to bring results. It is nearly impossible and probably unwise to attempt to play a fast-breaking, hard driving game without providing the players with rest. This year we are substituting entire units, giving the starting line-up a rest of from four to six minutes during the middle part of each half. It has been found that reserves, even though inferior as a team, can go in fresh and do quite well for short periods. This practice breaks the playing time of the regulars into periods of not more than seven or eight minutes, and they stand the pace and keep their drive and alertness better than when used too steadily. With this system, the players seem to stand up well throughout the long schedule of games which we play in the Northern Division of the Coast Conference, each team playing sixteen conference games. This is probably because they never reach such stages of exhaustion that they cannot completely recover within a few hours.

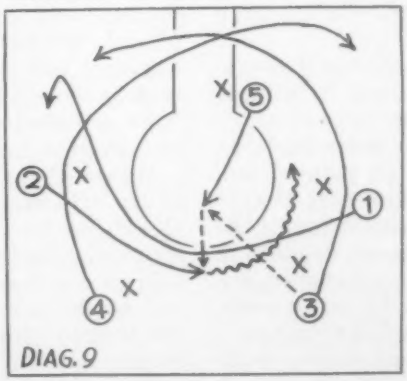
A fast, driving game is popular with players and spectators alike, and in my opinion is effective with most squads as far as winning is concerned. This type of play can be used without injury to players, and is actually good for them, if proper use of substituting privileges is made.


DIAG. 6


DIAG. 7



DIAG. 8



DIAG. 9

II. Offense in the Southwest

By Henry Iba
Oklahoma A. & M.

TWO offensive weapons are characteristic of Southwest Conference basketball: 1. Post play (single and double); and, 2. Fast-breaking offenses.

If teams are not scoring from fast breaks, they will set up on the offense as follows: Featuring post play, they will make their screens on the defensive forwards. After the ball has gone to the post, they will break their guards to the outside, the forwards to the inside, for 12 to 15-foot shots. Emphasis is placed on the one-handed shot, and terrific follow-up play.

The Oklahoma Aggies' offense is built on a passing and screening game, the idea in mind being not to let the opposing defense play a practice position. Against a good defense, it is impossible for our offense to be effective if we elect to shoot on the third or fourth pass.

Three Distinct Types of Offense

Due to the changes coming about in defensive play in our section, we find it necessary to carry three distinct types of offense: 1. Screening game; 2. Screening and revolving game against a man-to-man defense; and, 3. Passing game against a zone defense.

In Illustration 8, X3 passes to X1 and goes behind X1 and under the basket. X4 goes behind X2 and under the basket. X5 comes up on the free-throw line, outer half of the circle. X1 dribbles to the middle. X2 goes on outside of X1, taking a pass. X2 should get the shot.

In Illustration 9, X5 comes up on the free-throw line, outer half of circle. X3 passes to X5, then goes on inside of X1 and on under basket. X4 goes inside of X2 and under the basket. X1 comes across and outside of X5, occasionally taking the ball for a drive shot or set shot from the deep corner. X2 comes across on the outside of X5, taking the ball on the pass. X2 should get the shot.

It is important that both guards after going to the basket should cross and continue to the other side of floor in order to get the full effect of the revolving offense.

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Nation-Wide Amateur Athletics

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JOHN L. GRIFFITH, Editor

Physical Training and Naval Aviation

THE Secretary of the Navy has announced a plan for training Navy flyers which will be of interest to all the men and women who have been engaged in physical education work, as indeed it is to all of our people.

Briefly summarized, the Navy apparently feels that to win this war, we must have flyers who are tougher, stronger, and who have more fight and endurance than the enemy. The Navy apparently believes that one way to develop a strong fighting force is by, and through, athletic sports and exercises. Consequently, the announcement indicates that the Navy will lease four large universities, one on each coast, one in the South and one in the Middle West. At each of these base institutions twenty-five hundred aviation cadets will be enrolled. The men in each of these centers will be given three months of basic training, consisting largely of athletics and body-building exercise, such activities as ditch digging, wood chopping, jujitsu, boxing and hand-to-hand fighting.

To do this job the Navy will employ several hundred of our leading school and college coaches, athletic directors, and trainers. Following the course of instruction and training in these base centers, the men will be sent to other camps for training and aviation.

To those of us who have always believed that athletic training, and especially training in combat sports and in personal-contact games are of value in military and naval training, this announcement is encouraging. As we have so often pointed out, we are an athletic people. The critics may charge that we are a nation of spectators, but the fact is the American youth, almost from babyhood, engages in sports and contests. We have the spirit of competition, part of which is engendered by our games. This spirit of competition in football, for instance, is very much akin to the spirit of competition in air fighting. We congratulate the men of the Navy who, by this action, indicate that they not only appreciate the value to be found in rough and hardy games such as football, basketball, boxing and the like, but also understand America and the American boys and men.

We predict that the boys who are trained under the supervision of Lieutenant Commander Tom Hamilton, former Navy coach, and his assistants will be the toughest, the most aggressive, and the best flyers and fighters in this present war.

Post War Athletics

A GREAT many people are looking ahead to the post-war period and are attempting to guess what conditions will be like, when the war has been won. One prominent educator is of the opinion that things will be in such shape after the war that educational institutions will not have any time or use for intercollegiate athletics. A suggestion that comes from another source is to the effect that following this war or, in fact, now, the several state legislatures should pass laws making military training compulsory in all of the public and private schools of America. Still another thought that has been advanced is that we will be so hard up after the war, that it will be impossible for us to give any time to intercollegiate or interscholastic sports.

Far be it from us to assume the role of a prophet. We may, however, be permitted to record our guess along side of the guesses of others, granting at the same time, that these gentlemen who have advanced the opinions stated above are qualified to speak with more authority than are we. It may be mentioned that following other wars there has always been a great deal of interest in sports of various kinds. We have a notion that this war will not be an exception. We know that both the Army and the Navy have placed their stamp of approval on intercollegiate athletics, which of course means also interscholastic athletics. We anticipate that, possibly before this editorial reaches any of our readers, some important announcements will come from authoritative sources which will strengthen whatever we may have said now and in the past regarding the place that highly competitive athletics have in developing a strong fighting force.

During, and immediately following, the last war a great many of our people who were interested in physical education matters expressed their opinions freely. We have looked through the reports of the National Collegiate Athletic Association meetings back in those days and present herewith statements from different men who were at that time prominent in physical education and athletic circles.

Major Palmer E. Pierce, N.C.A.A. President, 1916: "Socrates expressed the underlying thought 'No citizen has a right to be an amateur in the matter of physical training. It is a part of his profession as a citizen to keep himself in good condition and ready to serve his state at a moment's notice.' All history shows that a healthy state requires a healthy citizenry. Just as soon as the inhabitants

of a country begin to disintegrate physically, decay sets in all around and the existence of the state is jeopardized. I wish to emphasize the necessity of preparing the greater part of our man power so that it can be efficiently used for defense on the outbreak of war."

Newton D. Baker, Secretary of War, August, 1917: "The encouragement of college athletics by intercollegiate games is in itself stimulating and beneficial, when it does not lead to such specialization as restricts the value of college athletics to a few specialists and denies it to the student body at large. It ought never to be forgotten that the primary purpose of collegiate athletics is a large number of sound bodies, rather than a small number of athletic specialists. The military usefulness of this principle is obvious, but it is further fortified by all those considerations which look to our national strength as based upon vigorous manhood."

Josephus Daniels, Secretary of the Navy, December, 1917: "How will the younger men be made ready for what they will shortly be called upon to do? Colleges will answer that question by encouraging college athletics, and emphasizing those games which insure that all the student body will be benefited by them. Intercollegiate games stimulate interest and should be encouraged. The stimulus of athletics, both in an improved morale and in an improved body, is everywhere recognized. Let it be emphasized more now that the need for youths of sinew and stuff is more felt than ever before."

President William H. P. Faunce, Brown University, 1917: "If our students are encouraged merely to sit in their rooms and mope, to lament for absent friends and question their own motives and their own fate, the spirit of the American college is weakened, and its service to the nation impeded. The same hearty, wholesome games that have proved essential at the front are essential behind the front today. We have all read of the British company that went 'over the top' kicking a football before them. That may not be in good form and the story may not be true. But it is certain that kicking the football before going over the top is one of the best possible preparations for meeting either victory or defeat with a steady heart. If we take a lesson from the camps we shall provide for a far more general participation in games by college students."

Dr. G. L. Meylan, Columbia University (who went to France in September, 1917, to organize sports in the French army under auspices of the American Y.M.C.A.), 1918: "One of the most definite lessons taught by the world war is that athletics have real military value. They serve admirably for the development of essential soldierly qualities, such as agility, endurance, courage, judgment, initiative, adaptability, and perseverance. That American soldiers possess these qualities in large measure, and that they were acquired through participation in athletics, is the opinion of military experts who have expressed themselves on the subject."

Dr. James H. McCurdy, Springfield Y.M.C.A. College, 1919: "Sir George Newman, in his report to the British Ministry of Health for August, 1919, concludes: 'The war has compelled us to realize more clearly the value to the state of healthy, well-grown children and adolescents, and of all educational and social measures conducive to this end, a practical and comprehensive scheme of physical training stands in the foremost place.' Monsieur Henri Paté, Deputy for Paris, in introducing to the Chamber of Deputies (France), Session of 1919, a compulsory physical education bill, states: 'Physical education is not merely a means for making future soldiers; its purport is higher and more general; and whichever way the conflicts arising between nations may be settled in the future, it possesses a primordial interest which is to give each man that physical and mental balance no man can dispense with, if he wants to discharge his duties in society. Moreover, would not this ideal, if it were realized, constitute the best military preparation? The best means to develop our children into men capable of defending (should that so happen) their property, their freedom and honor, is not to have them play at being soldiers, but to compel them to practice such physical exercises as may develop their muscles and strengthen their courage. So, no scholar battalions, but fresh air, hygiene, athletics and exercises that harden the body.' "

Hon. Newton D. Baker, Secretary of War, 1919: "It was the product of your training that came to these (officers' training) camps. The young men from the colleges crowded into them. They quickly took on as much military training as was necessary; but it was what they had learned in the classroom of the colleges that made their minds subtle and flexible. What they learned in the gymnasium and on the college athletic field gave their bodies a certain capacity for endurance and resistance that made this training exceedingly easy, and speedily filled the army of the United States with an enormous number of highly trained, invaluable, usable leaders of men.

"If it had not been for the college gymnasium and the athletic field, I venture to say that the American army could not have been officered in any such small space of time, for we needed, not only the trained mind and trained muscles of the American youth, but we needed the spirit of fair play. We needed the spirit of teamwork, the spirit of organized games, which has come to be characteristic of college athletics. We needed all that, and it was a contribution of inestimable value, and one which in any future emergency that confronts this country we must look to you again to supply."

What the Schools Are Doing

IN THE December issue, it was suggested that athletic directors and coaches inform us regarding their contributions to the physical fitness program. Some of the reports are printed in this issue; others will appear in subsequent issues. All readers are invited to contribute. Your suggestions may be just the ones needed.

Warming-Up

By Edgar Stansbury

Department of Physical Education
Western Kentucky State Teachers College
Bowling Green, Kentucky

Definition: Warming-up* is the act of exercising to a non-treppe level just prior to the event in which one wishes to participate in order[1]: 1. To get the benefit of the treppe effect; 2. To remove the effects of the possible early contracture; 3. To increase the body temperature so that heat will be produced in order that; (a) the muscle tonus will be improved, (b) the relaxation period will be shortened, and (c) the tearing or pulling of muscles will be prevented; 4. To improve the circulation of the blood so that (a) the underlying biochemical reactions will be increased, (b) the flow of blood to the exercised parts will be increased; and 5. To make certain cardio-respiratory adjustments.

The intensity of the ensuing exercise, however, will determine the extent of the non-treppe level.

The things which will determine the effects of warming up are as follows:

1. The Speed of Movement. Each individual has an optimum rate of which he is his own judge.

2. The Resistance That Is Encountered. This is the amount of weight or of resistance used as an auxiliary implement.

3. The Condition of the Individual. The amount of sleep one gets, the diet one uses, the efficiency with which the body uses the nutritive material, the elimination of waste, previous exercise, etc., will determine the condition of an individual.

4. The Age of the Individual. One's age will make a big difference in the effect, the extent, and the nature of the warm-up. Likewise, age will determine the extent of the protoplasmic materials in proportion to the quantity of connective tissues.

5. The Duration of the Warm-Up. The extent of the warm-up will be determined by the intensity of the activity which is to follow, by previous exercises, by age, etc.

6. The Position of the Body. The type of activity which is to follow will determine to a large extent the position of the body during the warm-up. Examples: In golf, swinging the clubs; In basketball, shooting and dribbling; In baseball, fielding and batting.

7. The Sex of the Individual. The tempo of the warm-up may be determined by sex.

8. The Psychic Conditions. Individuals perform consistently better, if the environment is changed at the psychological time.

9. The Temperature. Muscles do better work with an increase of temperature. This increase is aided by the use of massages, and of extra clothing such as sweat shirts, sweat pants, etc.

The physical properties of muscles are contractibility, irritability, conductivity, and metabolism. When a muscle is stimulated, its elastic properties are such that its length is appreciably reduced and it tends to take this length, unless prohibited from doing so by some external force or obstacle. Moreover, when a muscle responds, certain rather definite and specific changes of a mechanical and a chemical character occur within it. Heat, electricity, and sound are also produced in the muscle.

A greater volume of blood flows to all parts of the body during the warm-up period, and particularly to the contracting muscles. The mechanical response of the muscle does not begin immediately upon the application of the stimulus, but only after a short interval—the latent period. When a muscle contracts and relaxes, the circulation of the blood to the working parts is aided. The mechanical changes which take place in a contracting muscle have been demonstrated, time and time again, by the use of the kymograph. It has been shown that the duration of the latent period is less than that of either the contracting or of the relaxing period, and that the contracting muscle requires less time for its reaction than the relaxing muscle requires. It is common knowledge that muscles work in pairs, and thus it can be seen easily that these muscles must work in near unison, if the most efficient work is to be obtained from the muscle. On account of the discrepancy in the length of time between the contracting and the relaxing period of a muscle, the contracting muscle gets the jump on its antagonist which may be pulled, strained, or even ruptured. Proper warming-up of the muscle tends to diminish this discrepancy between the time of the contraction and the relaxation phases; thus, proper warming-up aids in preventing injury to the muscles by pulling.

At this time it is important to point out something about the viscous fluids through which the muscles must act. The viscosity of the muscle fluids acting through the structural framework of the same muscle tends to retard the movement of contraction.

Hill[2] has shown that the viscosity of the muscles acts as a "brake" and prevents them from responding fast enough to tear themselves apart. Viscosity, therefore, tends to act as a governor of the speed at which mechanical work can be done, and it tends to hold the muscle within the limits of safety.

Too rapid a movement, or an insufficient warm-up is, therefore, wasteful of potential energy and hence is relatively inefficient in relationship to the efficiency which can be secured by the proper warm-up. The heat produced by the performing muscles in warming up tends to lessen the resistance of the viscous fluid.

The facts indicate that, following periods of rest after exercise, there is a greater amount of internal muscle resistance which antagonizes and diminishes the output of the muscle machine.[3] It is, as if it were during a rest period, that the muscle becomes "set" only to become "limbered up" during the warming-up period.

Heat plays a very important part in muscular contraction. From Van Hoff's law, we know that for each rise of ten degrees in temperature chemical reactions are increased in rate from two to three times, whereas, physical reactions are increased once. Heat, then, within certain limits accelerates all phases of the muscular contraction. The latent period is shortened, and the rapidity and effectiveness of the contraction are increased, whereas, the relaxation phase is especially accelerated. In the first contraction of a muscle following rest in man, the mechanical response is markedly prolonged, and the tension that is developed is considerably less than that of a similar response after mild exercise. Warming-up increases the approach to a maximum extent of contraction and sets the muscle in readiness to do its most efficient work. If muscular movements are carried out too quickly, very little actual work will be done by them and their efficiency will be low. On the other hand, if they are carried out very slowly, a very large amount of work will be accomplished, but the

(Continued on page 36)

* Unless otherwise indicated, exercise in this paper is synonymous with warming up.

1. Gould, A. S., and Dye, J. A., ***Exercise and Its Physiology***, A. S. Barnes and Company, New York, 1935, p. 389.

2. Hill, A. V., "The Maximum Work and Mechanical Efficiency of Human Muscles and Their Most Economical Speed," *Journal of Physiology*, London, 1922, 56, p. 19.

3. Hill, A. V., *Muscular Movement in Man*, McGraw-Hill Book Company, New York, 1927, p. 42.

Off to a Boom Year in Track

● **The starter's gun opens one of the greatest years in American track history. Viewed as a builder of youth and morale, track will play a role of increasing importance in America's victory drive. Track programs are under way for the Army, Navy and Marines . . . the A. A. U. Championships will go on as scheduled . . . the First Pan-American Games are to be held in Buenos Aires. Throughout the length and breadth of the hemisphere, millions of Americans will participate in organized track.**

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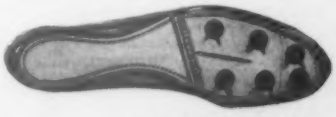

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System Play versus Free Play

(Continued from page 6)

teams, however, can utilize variety and so possess continuity in play. In fact, the system team may be a wild-passing and wild-shooting team.

The free-play teams and the system teams utilize the same fundamental or basic plays of basketball. The only difference is in the philosophy behind their use of these fundamentals. All basketball teams score by the following basic play situations. First, the fake; the offensive player gets away from a defensive player by a fake and dribbles around to score or set up a two-on-one situation. Second, the offensive player obtains a shot by a direct cut. The cut may be over or behind the defensive guard. Third, the offensive player obtains a shot by using the cut-over or pivot type of screen play. The player in possession of the ball sets up the screen. One or more players cut over and around the player with the ball. Last, a player scores by the use of the pick-off screen. One offensive player screens off another offensive player's guard to free a player for a shot. The offensive player dribbles around the pick-off or receives a pass from a third player by cutting over the pick-off player. On a defensive switch the pick-off player may be free to receive a pass. Variation in basketball comes from the multitudinous possibilities of movement and arrangement of players to effect these basic plays or combinations of them.

The following are reasons why a system game is easier for a school team. System plays with continuity maintain floor balance. The coach can be sure that only one player cuts for the basket at a time. A system assures team play; the plan of action is determined. The personal prejudices of the players can be controlled. For example, a few years ago a good senior Lowell team was graduated. The succeeding team was to be composed of talented juniors who thought a great deal about their own shooting opportunities. The center of that team was a team-minded senior. Early in the practice season this boy mentioned the possible four other members of the team by name and then said, "Say, when am I going to get a shot?" Two of the junior players had been star junior high school players and were jealous of each other. The team had a successful season because plays were designed with the senior player as the feeder. The coach can utilize the individual abilities of his players and take advantage of the opponents' weaknesses in a more controlled manner and with effective repetition. System play affords a framework for player habits which speeds up teaching an effective repertoire of plays for secondary school players.

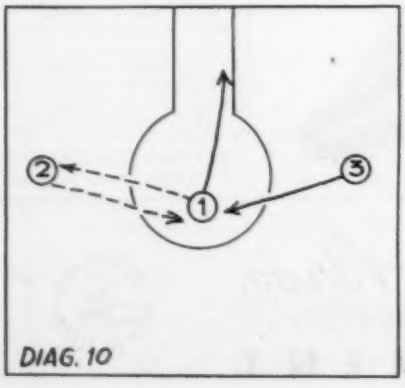
A Three-Man Offensive System

Three-man systems speed up teaching players offensive and defensive reactions. The play situations recur faster. Weaknesses in individual skills and techniques show up and special corrective drills are given to the players who need them. In fact the three-man systems are drills in individual fundamentals as well as team-play situations, both offensive and defensive. There is a direct carry over to the five-man system. There is no basic play situation that involves five players that can not be duplicated by three players. The defensive players learn to recognize the type of screen used against them and they scissor or shift according to the defensive method desired. Each three-man system emphasizes certain objectives which will be explained in the discussion of the system.

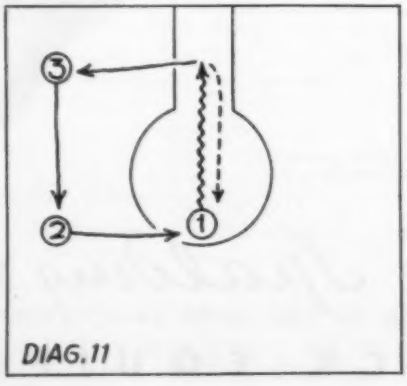
Three-man pass and cut-system: (Diagram 10) Player 1 passes to player 2 and cuts for the basket to receive a return pass. The cutter may cut over or behind his defensive player. Player 3 who did not pass or receive the pass takes the place of the passer. The system requires that: (1) The passer cut for the basket. (2) The player who neither received nor passed the ball takes the place of the passer. (3) Effect continuity to the play, by passing off to the player taking the place of the passer. This drill is of particular importance to beginners. No dribbling is permitted. The offensive player protects the ball by arm movements, fakes and pivots. The first offensive reaction of a player should be a pass or shot reaction. The dribble reaction should follow a fake shot, pass or step except when there is no defensive player blocking the path to the basket. The offensive basketball player with the ball is the quarterback of the basketball team. He must be sure the next pass is effectively received by a member of his team. The offensive player must be sure the receiver is open. It is up to the passer to direct a change of direction if necessary. The offensive player must always keep his pivot foot on the floor. It is often necessary to withhold a pass. Defensively the drill emphasizes that: (1) The guard retreat immediately on a pass. (2) The guard maintain a defensive position at all times. (3) It is most important to guard the offensive player immediately after a shot or pass.

Individual fake play, three-man system: (Diagram 11) Player 1 fakes to the guard and attempts to dribble by for a score. (2) If player 1 fails to elude his guard, he passes off to player 2, who moves to 1's original position when 1 stops the dribble. (3) Three moves to position, and 2 and 1 move to position 3 on the pass-off. Offensive principles: (1) Utilize a variety of fakes. (2) Fake to massed lane and dribble down the open lane. (3) Dribbler must learn to protect the ball against all opponents. (4) The dribble play may win, but should never lose anything. When the dribbler is stopped, it should be a signal for a pass-off or a pass to a cutter. Defensive principles: (1) The guard must expect a dribble from the offensive player who has not dribbled. (2) The guard must counter an offensive foot movement of the offensive player. (3) Never jump or leave the floor to block a faked shot or pass.

Three-man pivot play. (Diagram 12) Explanation of play: (1) Player 1 passes to player 2 at the post and cuts by close to 2. (2) Player 2 fakes to 3 but steps



DIAG. 10



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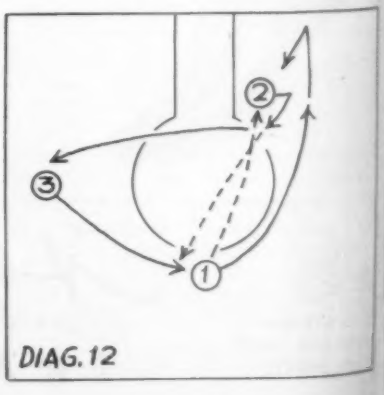


DIAG. 12

COACHES BUILD "YOUTH MOVEMENT" *THE AMERICAN WAY*

By **L. B. Icely, *President***
Wilson Sporting Goods Co.

HITLER's basic challenge to the American way was insidiously prepared long before he massed his airplanes and tanks for battle.

His "Youth Movement" marshalled an entire generation of German youth and trained them to the "ideals" of conquest and destruction.

Without any such patriotic fanfare or the high-sounding title of "Youth Movement," American coaches have long been creating the basis of a youth program that was destined to be democracy's answer to the dictators' challenge.

In Youth's most receptive and formative years, interest in sport has given coaches in schools and colleges a route to the hearts and minds of our young people more direct than that enjoyed by either preacher, teacher or parent.

While guiding young America in physical activities designed to build physical health and stamina, most of you have instinctively recognized your larger opportunity to mold character and instill the ideals of fair play and good citizenship.

While building the physical qualities that have formed our first line of defense in the present emergency, you have patiently instilled also the elements of self-reliance, courage, team-work, fair play and self-respect that are the foundation and hope of democracy.

You have already seen some of the results in the superb conduct of Americans at Pearl Harbor, at Wake Island and in the Philippines.

By foully charging, "before the ball was passed," the Japs gave our men a bad first quarter in the Pacific, but any coach in America would slap our boys on the back for the way they fought and would know they were going back in to *win*.

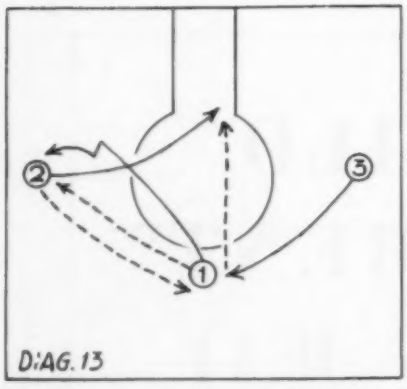
They will win because their inborn love of athletics and strenuous competitive games, which you have patiently fostered, has kept American Youth athletic in mind and body. They will win because you have taught them courage, persistence, team play and the value of freedom. They will win because, largely from you, they have learned they are fighting for things greater and finer than are Hitler and the "Japanazis."

From a favorable observation post, as president of Wilson Sporting Goods Co., I have for many years watched the growth of American interest in all fields of sport. With my associates I have had a vast urge to encourage wider participation in sport through the development of better implements of exercise and athletic contests.

I have had the friendship and valued cooperation of many of you in improving the material and design that goes into today's baseballs, footballs, basketballs, softballs, golf clubs and balls, tennis rackets and balls, badminton, squash, handball and gym equipment.

I felt that the production of this kind of equipment was a vital factor in preparing the defense of our country. I knew that every improvement in equipment would be a help to you in your great job of building the physical and moral stamina required to man our guns, ships, tanks and planes if we were called upon to use them.

Now that war has come to us it is satisfying to know that we shall have victory and peace the earlier because of the qualities that you have built into American youth. Your "Youth Movement" which is now a basic defense of our Land and its principles will in due time have its glorious opportunity also to function creatively in the building of a greater America and a finer world.

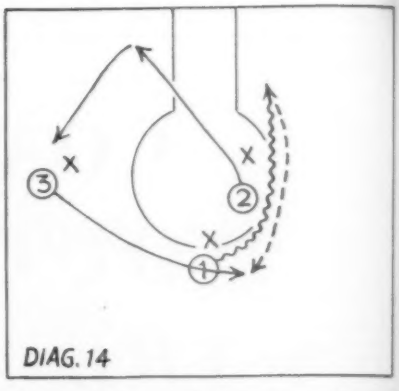


DIAG. 13

with his foot on the side by which 1 cuts, and fakes a pass to 1. (3) Player 2 steps back toward player 3 which is the signal for player 3 to cut to the original position of player 1 to receive the pass-off or continuity pass. Player 2 cuts to the position of 3 on the pass-off pass. Player 1 is the new pivot man at position 2. (4) Drill the continuity before the scoring possibilities of play. (5) Scoring variations of play: (a) Pivot man can shoot. (b) Pivot man can fake to 1 and dribble for a shot. (c) Pass to cutter 1 for a shot. (d) Cutter 1 may return the pass to the pivot man 2, who cuts for the basket, after passing to 1 or 1 may pass off to 3 who cuts to the original 1 position. (e) If the pivot man, 2, dribbles and stops, player 3 may move his defensive man down the side line toward the end line and then cut over 2 for a score attempt. (f) When player 1 stops his dribble, after receiving the ball from pivot 2, the pivot man may screen for 3 who cuts over as in (e). After 3 cuts over 2, 2 cuts out to the original position of 1 for the continuity pass or a floor shot.

Three-man pick-off screen play: (Diagram 13) Explanation: (1) Player 1 passes to player 2 and screens 2's guard. Screener must be taught never to foul in attempting to screen; if the defensive player of 1 avoids screening, nothing can be done except to start a new continuity. (2) Player 3 cuts to the original position of 1 to receive a pass from 2. Two cuts for the basket over the screen of 1, to receive a return pass from 3. (3) After player 2 cuts over the screener 1, 1 cuts out to the original position of 2 to receive the continuity or pass-off pass from 3. Scoring variations of the play: (a) Three passes to 2. (b) Three may pass to screener 1, cutting for the basket, after 2 cuts over him. (c) Screener 1 may receive a pass from 2. (d) Screener 1 may cut back over cutter 2, the moment 2 cuts by, and receive a pass from 3. The screener is useful as a screener only up to the moment the cutter cuts past him; after that the screener should make himself useful as a potential scorer or as a pass-off or feed man.

Two-man-with-the-dribble play: (Diagram 14) Explanation: (1) Player 2 picks off player 1's guard. (2) Player 1 with



DIAG. 14

the ball fakes a shot, pass or step and dribbles around 2 to the score. (3) the moment 1 dribbles by 2, 2 cuts for the basket to receive a pass from 1, if 2's guard shifts to 1. The cutter or dribbler always goes by the side of the screen. The screener always takes his first step with his foot on the side of the cutter and turns so as always to see the dribbler. (4) When player 1 stops dribbling, 3 cuts to the original position of 1. Pass-off man 1 screens. Screener 2 takes 3's position on a pass-off pass.

Variations in the five-man offense come from the multitudinous ways the movement of five men can be used to set up these basic plays or combinations of them. The defensive players learn how to recognize a basic play situation; the offensive players learn how to execute them.

Advanced Parallel Bars

(Continued from page 6)

kets) (Illustrations 6 and 7): This trick is very simple for some performers but may cause trouble for others. The common fault is that the performer does not hold long enough to the bars, prior to the vigorous throw from the shoulders. As he throws from the shoulders he should force an arch into the back and should lift the head vigorously. He should also reach back with the hands, if he wants to catch a support position.

In beginning this trick the performer, first, should learn the peach basket to an upper-arm hang. He should try reaching up with the arms between the bars as he arches the back; in this case he will not try to catch the upper-arm, hang or support position.

This trick may be executed with all kinds of variations such as peach basket to an upper-arm hang; to a support; to a cross-arm catch; with a half twist; to a glide-kip (Illustration 8); and to a shoulder-balance or handbalance.

Mounts

Flying Kip with a Half Turn to Upper Arm Hang: In learning this trick the performer should drape one bar with a mat. He should try to execute the turn while he has maximum height. He should hang on with the right or left hand, depending which way he turns. After the turn, this hand is then placed on the other bar. Throughout the trick the endeavor should be to keep the legs over the center of the bar.

Flying Kip to Support (Illustration 9): This trick demands a maximum pull from the shoulders as the legs are directed upward at a forty-five degree angle. The performer leans slightly backward, and as he catches the bar, his legs are in a half-lever position.

Back Uprise to a Handbalance, Followed Immediately by a Back Somersault to a Support: This stunt may be used very effectively in a routine on account of its excellent continuity. The uprise to a handbalance should be executed perfectly if the somersault is to be done properly.

Glide Kip to Immediate Upward Shoot to Upper Arm Hang (Illustration 10): This trick is somewhat similar to a dislocator move. As the performer pulls and kicks vigorously backward, he tries to assume an upper-arm hang position.

Peach Basket to a Handbalance (Illustration 11): This trick should first be learned to a shoulder balance. The pull from the shoulders is similar to the peach basket but the timing of the arch is different. The performer releases much earlier, and his back should be arched earlier than for the peach basket. A much more vigorous throw and a faster whip of the flexed hips are required, so that he may obtain the necessary kip.

Dismounts

Uprise to a Double Rear Dismount (Illustration 12): In executing this trick the performer should endeavor to raise his hips as high as possible. A flexed position is usually held throughout the stunt. In addition he should make sure that he obtains full benefit of the swing of the legs. He should start to lean toward the side as he is completing the uprise.

Stoop Vault over Both Bars to the Mat Illustration 13): This trick should be learned with the bar free so that, if the performer hits the bar, it will give freely

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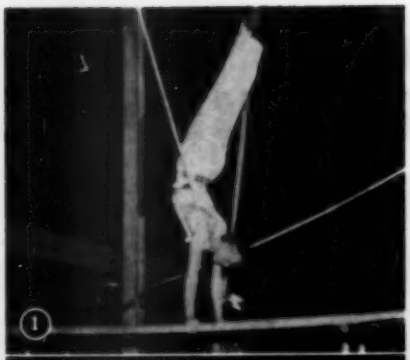
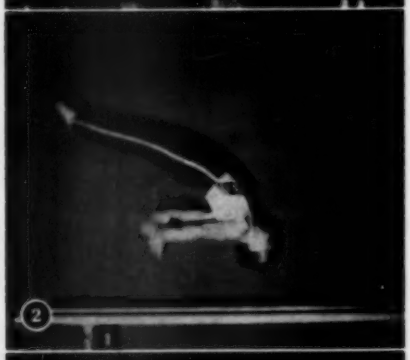
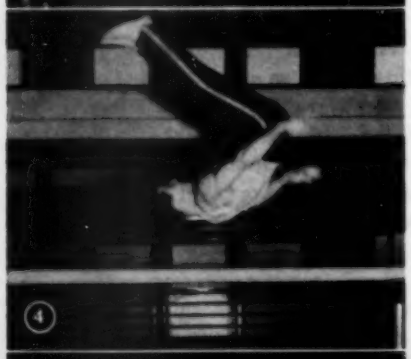






and he will not be injured. It is very important that he allow his legs to get off balance to a point where they are beyond the farther bar. He then obtains a vigorous whip from his arched back, in order to clear the bar.

Front Somersault over One Bar (Illustration 14): Mastery of the front somersault to a support might be helpful to the performer in attempting this dismount. The front somersault to a support, however, is not necessarily a prerequisite for the front somersault over the one-bar dismount. In this dismount the performer releases slightly later than for the front somersault to a support. The performer should lean his shoulder toward the bar over which he is to execute the dismount. His hands are released together. The hand closer to the bar regrasps so that he may maintain balance. The safety belt should be used in learning this trick.

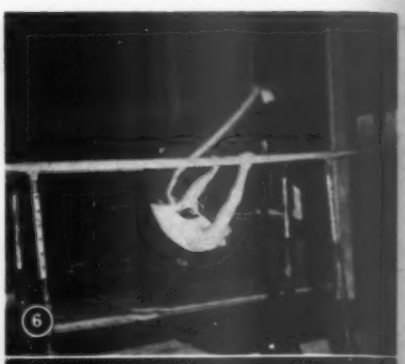
Back Somersault over One Bar (Illustration 15): The back somersault to a support should be mastered before the performer attempts this dismount. In learning to push away correctly, he may use the safety belt to advantage. Ropes may be held unevenly. When the performer tries the trick he will have a tendency to use the ropes to help him over the bar. The hands are released together. The safety belt should be used when the trick is first tried.

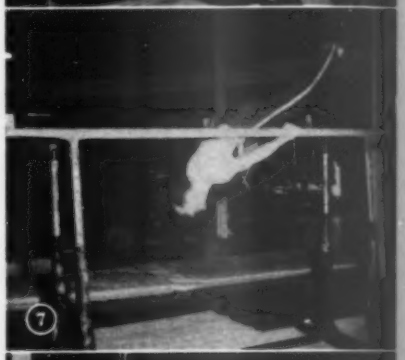
Flyaway at End of Bars (Illustration 16): The back somersault to a support should be mastered before the performer tries a flyaway at the end of the bars. In preparing for the dismount, he might try a back somersault to a support with the height of the bars below shoulder level, so that he may dismount between the bars. In trying the actual trick, he should keep his shoulders well forward. The safety belt should be used, until the trick is fairly well mastered.

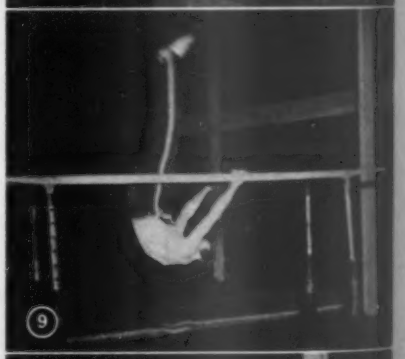
Balances

Many of the difficult balances such as straight-arm straight-leg presses, planches, arch-back presses, press into a parrot balance are strength tests rather then skill tricks. The emphasis in gymnastics should be upon skill rather than upon strength. Therefore in this article the only balance that will be described is the one-arm balance.

One-Arm Balance (Illustration 17): The performer may learn this trick on the floor by transferring his weight to one arm and getting additional balance and slight support by the use of one finger of the opposite hand. The control on the parallels is different from that on the floor. In general, the performer should not try to lift the free arm too high. He should strive to keep the free shoulder well back and at the same time keep on top of the supporting arm. Every semblance to hunching the shoulders







should be avoided. This trick may be learned first with the legs apart. After the performer seems to be fairly advanced with the trick, he might try to use the free arm for additional control. The progress of difficulty in position of the free arm is as follows: 1. Hand off the bar; 2. Arm straight out; 3. Arm bent and hand on chest; 4. Hand to the side; 5. Hand slightly bent and placed with the back of the hand on the small of the back.

Swinging Tricks Involving a Change of Direction

Backward Swing in Support to a Half Turn (Illustration 18): In this type of stunt, swinging from the shoulders with a full pendulum is demanded. The performer should turn at his maximum height. This gives an extra push with both hands. He should counter-balance the throw of his legs by leaning the shoulders slightly backward.

Handbalance Swing Down, Half Turn to Another Handbalance. Exceptional timing and control is required in the execution of this trick. An excellent photograph of George Wheeler (five times National A. A. U. Gymnastic Champion) executing this trick appears on the front cover of the 1942 Gymnastic A. A. U. Rule Book.[1]

Other swinging tricks involving a change of direction were described in the article on *Intermediate Parallel Bars.*[2]

From a Handbalance, a Giant Roll with a Half Twist (Illustration 19): This spectacular trick requires patience and determination in mastering it. From a handbalance position the performer should stretch out to an upper-arm hang, letting the entire body drag behind. He should then swing downward and upward, throwing the head back immediately, so that he may obtain the necessary lift upon releasing his hands from the bars. The execution of a left twist is performed by releasing both hands immediately at the greatest height over the bar; completing a semi-somersault and replacing the left hand on the left bar and pushing with it so as to completely turn the body with a half turn. The right arm then comes up over the left bar and the left arm comes over the right arm. Then a backward swing follows.

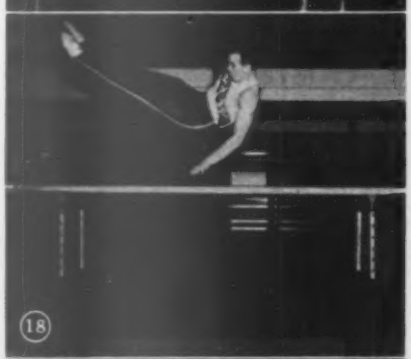
Another giant roll trick that may be used to advantage in a routine is the giant roll to a handbalance (Illustration 20).

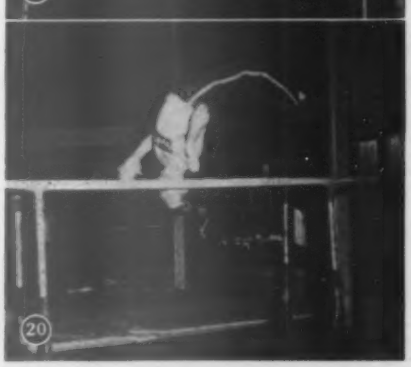
Typical Advanced Routines

Caton Cobb's (1941 National Collegiate Parallel Bar Champion) Routine: Peach

[1] Copies of the National A. A. U. Rule Book may be obtained from Mr. Roy Moore, 67 Vestry St., New York City.

[2] Elementary and Intermediate Parallel Bars, ATHLETIC JOURNAL, Vol. XXII, No. 5, January, 1942, pp. 11, 32, 40.





basket to handbalance; back somersault to immediate high half turn at peak of forward swing; flying kip to support; swing to a handbalance; half turn in handbalance; lower body slowly to flying kip to upper-arm hang; rear uprise with half turn; swing back to half turn in support; forward to high momentary U position (Illustration 20); swing to handbalance; back somersault; dismount over right bar.

Paul Fina's (1939 Big Ten Parallel Bar Champion) Routine: Peach basket to a handbalance; stretch out a giant roll with a half twist; back uprise; swing forward; swing backward into a quick hand-stand change (holding momentary handbalance); drop into a flying kip; back uprise to handbalance; back flip to a support; flying kip with a half turn; uprise; swing to handbalance; swing down, swing back to a front somersault over the left bar.

The author wishes to acknowledge the assistance of Paul Fina in preparing the series of articles on the parallel bars.

Progression Program for the Parallel Bars

(Continued from January issue)

The illustrations referred to below appeared in the January issue.

From a bent arm cross-rest, walk forward with steps; at the end of the bar do several push-ups.

From a front rest, ride a bicycle and walk along the bar with short steps.

From a cross rest backwards, ride a bicycle and walk backwards along the bar with short steps.

From a cross rest, walk along the bar with one leg at half lever.

From a cross rest with legs at half-lever position, walk along the bar.

From a posterior cross rest, walk backwards with legs at half lever.

From a rest, jump forward with legs in half-lever position.

From a rest, **walk** forward with legs in half lever position.

Do the preceding number and change the grasps.

From a rest stand, swing the legs through to a momentary hang-lying position, return. (Illustration 6).

Hip-swing up to a cross-riding seat, assisted by the heels on the bar. Turn over forward regrasping (Illustration 7).

Turn over backwards between the hands to a bird's nest, return.

Hip-swing up to cross-riding seat without the assistance of the heels.

Jump to a cross-riding seat on the right bar in front of the hands and return. Do the same to the opposite side.

Jump to an outside riding seat on the right bar in front of the hands; return.

Jump to a cross-riding seat on both bars, legs in front of hands; return.

With the right hand on the left bar, jump with a turn to a cross-rest, facing out; same to the opposite side.

Swing with a small swing, keeping body form; make the swing from the shoulders.

With the right hand on the left bar, jump to a cross-rest, facing out; return; same to the opposite side.

With the right hand on the left bar, jump to a cross-rest facing out; swing to an outside cross-riding seat to the right behind the hands; return; same to the opposite side.

With the right hand on the left bar, jump to a cross-rest, facing out; swing to outside cross-riding seat to the left behind the hands; same to the opposite side.

With the right hand on the left bar, jump to a cross-rest, facing out; swing to inside riding seat, to the right behind the hands; same to the opposite side.

Swing to an outside cross-riding seat to the right; quarter-turn right to back; rest on the right bar; push off forward. Same to the opposite side.

With the right hand on the left bar, jump to a cross-rest facing out; swing to the outside cross-riding seat, to the right, behind the hands; quarter-turn, right to back; rest and push off forward; same to the opposite side.

Jump to a cross-rest; raise the right knee upward; straighten the right leg; return and repeat to the opposite side.

Jump to a cross-rest; raise both knees upward; straighten both knees and return.

From a cross-rest, swing the legs forward and backward and spread on the backward swing.

From a front-rest, swing and spread the legs on a front swing.

Alternate the two preceding at both ends of swings.

Swing and dip on backward swing.

Swing and dip on forward swing.

Travel forward with dips on the backward swing.

Travel backward with dips on the forward swings.

Travel forward with dips on the backward swing and jump back.

Lazy man's kip. Place the soles of the feet at the top of the base; push with the feet and pull with the arms in order to assume a cross-rest position.

Rear-vault to the right; same to the opposite side.

Rear-vault in the center of the bars.

Jump to the middle of the bars; front-vault; dismount to the right; repeat to the left.

Straddle over the left bar to a cross-riding seat on the left bar behind the hands; push off backwards. Same to the opposite side.

Straddle over the left bar to a cross-riding seat on the left bar behind the hand; swing the legs forward and dismount with a rear vault; same to the opposite side.

Jump to a double-knee hang on the far bar; push up side-riding seat on far bar; jump to the mat.

Grasp the far bar; hip-swing up to side knee leaning rest; turn over forward.

Grasp the far bar, hip-swing up to a chest-balance, grasping the near bar; turn over forward to elbow hang.

Jump to a cross rest; raise the right leg slowly to a cross-riding seat over the right bar. Return and do the same on the other side.

Cross-rest; swing to a cross-riding seat over both bars; do a series of cross-riding seats.

Do an outside cross-riding seat to the right, right leg one-half circle left to cross-riding seat facing out; swing the legs back to cross-riding seat back of the hands and continue to travel backward. Same to the opposite side.

Jump to a cross-riding seat over both bars; rear-vault to the right; same to the left.

With the right hand on the left bar, jump to a cross-rest facing out; swing to a cross-riding seat to the right.

Jump to a cross-rest; swing to an inside-seat to the right; swing forward to an outside-seat right; dismount.

With the right hand on the left bar, jump to a cross-rest facing out; swing and front-vault to the right. Same to the opposite side.

From a cross-rest facing out, swing to various seats and mounts.

With the right hand on the left bar, jump to an outside seat to the left; swing to the inside seat left and then to inside seat right and dismount.

Straddle over both bars to a cross-riding seat behind the hands; swing down and jump to a cross-riding seat in front of the hands. Do a series of cross-riding seats.

Straddle over both bars to a cross-riding seat behind the hands; front-vault; dismount.

With the right hand on the left bar, jump to a cross-rest facing out; swing; front-vault to the right with a quarter-turn to the left. Same to the opposite side.

From a cross-rest facing out, swing from various seats and mounts to other seats and mount. Use various dismounts.

With the right hand on the left bar, jump to outside seat, left; swing to an inside cross-riding seat, right; jump to an inside cross-riding seat left; swing down

Straddle over both bars to a cross-riding seat behind the hands; swing down and up to a cross-riding seat in front of the hands; do a series of cross-riding seats; dismount.

Straddle over both bars to a cross-riding seat behind the hands; front-vault; dismount right. Same to the opposite side.

With the right hand over the left bar, jump to a cross-rest, facing out; swing to a riding seat over both bars, hands behind; rear-vault to the right. Same to the opposite side.

Jump to a cross-riding seat right; half turn to a cross-riding seat over both bars; swing high and do a front vault; dismount.

Jump to an inside riding-seat to the right; rear-vault to the right; same to the opposite side.

Jump to an inside riding-seat to the right; rear-vault to the right; same to the opposite side.

Upperarm hang, swing. (Illustration 8.)

Elbow-swing.

Elbow-swing to bent arm; cross-rest.

Elbow-swing to cross-rest; forward and backward swing. Rear-vault.

Upper arm hand-swing to elbow rest and back to upper arm hang, on back and forward swings.

Elbow-swing to various mounts, seats, rests, and dismounts.

Upper-arm hang to various mounts, seats, rests, and dismounts.

With a running start, do front-vaults, flank-vaults, etc. with various turns.

Rear-vault to the right or left with quarter turn to the left or right.

Elephant-walk.

Monkey-walk.

Walk in hand and heel hang.

Walk in hand and instep hang.

Upper arm hang swing; spread the legs above the bars on forward swing; swing down; do the same with spreading legs above bars on backward swing.

Jump to a cross-riding seat on right bar; place right hand in front, swing up backward and forward to cross-riding seat on right bar again, hands in front; same to the opposite side; alternate from right to left bar.

Travel along the bar in different seat positions; combine any two.

Jump to a cross-riding seat to the right; jump to an outside cross-riding seat to the left; rear-vault to the right with a half turn to the left; same to the opposite side.

With a running start, rear-vault to the right with a half turn to the left; same to the opposite side.

Straddle-vault mount to a cross-riding seat in front of hands; rear-vault; dismount.

Straddle-vault mount over the right bar to a cross-riding seat over both bars; turn over backwards to the floor.

Straddle-vault over the right bar and down between the bars to the floor.

Jump up and straddle back over the right bar to a cross-stand on the mat; same to the left.

Jump up and straddle over both bars to the floor.

With the right hand over the left bar, jump up to a cross-rest facing out; swing and straddle forward over both bars to the mat.

Straddle over the right bar to a cross-riding seat on the left bar; rear-vault to the right with a half turn left. Same to the opposite side.

Straddle up over the right bar to the outside cross-riding seat left; swing the legs forward and front-vault.

Hip-swing up to a cross-riding seat over both bars; straddle forward to the floor.

Lazy man's kip. Change the right hand and come to a front-rest on the left bar; change the left hand and come to a cross-rest facing out; walk to the end of the bar and straddle-vault off to the mat.

Do a lazy man's kip to an outside cross-riding seat to the right; quarter turn right to back rest; fall backward and turn over to the mat.

Walk forward in a bent arm rest position.

Lion's crawl. Walk the length of the bars in bent-arm cross-rest position, reaching forward alternately with each arm.

Jump, straddle up over the right bar with rear-vault left, to the floor.

Jump, straddle up over the right bar with rear-vault left, quarter-turn to the right.

With bent arm, swing; swing forward and jump; repeat on backward swings.

With a running start, flank-vault right over the left bar on a backward swing.

Swing-dip several times on forward swing; repeat on backward swing.

Jump to a cross-rest at center and forward-scissors right; front-vault.

Jump to a cross-rest at center; swing forward and backward with backward scissors; rear-vault to the right and left.

Back hang-stand to a cross-riding seat over both bars; rear-vault; dismount with half turn.

Upper-arm hang; forward swing to a cross-riding seat over both bars; quarter-turn to side-riding seat left; with the right leg half-circle to the left and dismount with a quarter-turn right. Repeat to opposite side.

Forward roll. (Illustration 9.)

Backward roll.

Jump up, circle both legs backward outside of right bar to the floor.

Raise the legs to half lever; quarter-turn to the right to the same position, with both hands on the right bar; make another quarter-turn, facing out. Dismount to the mat.

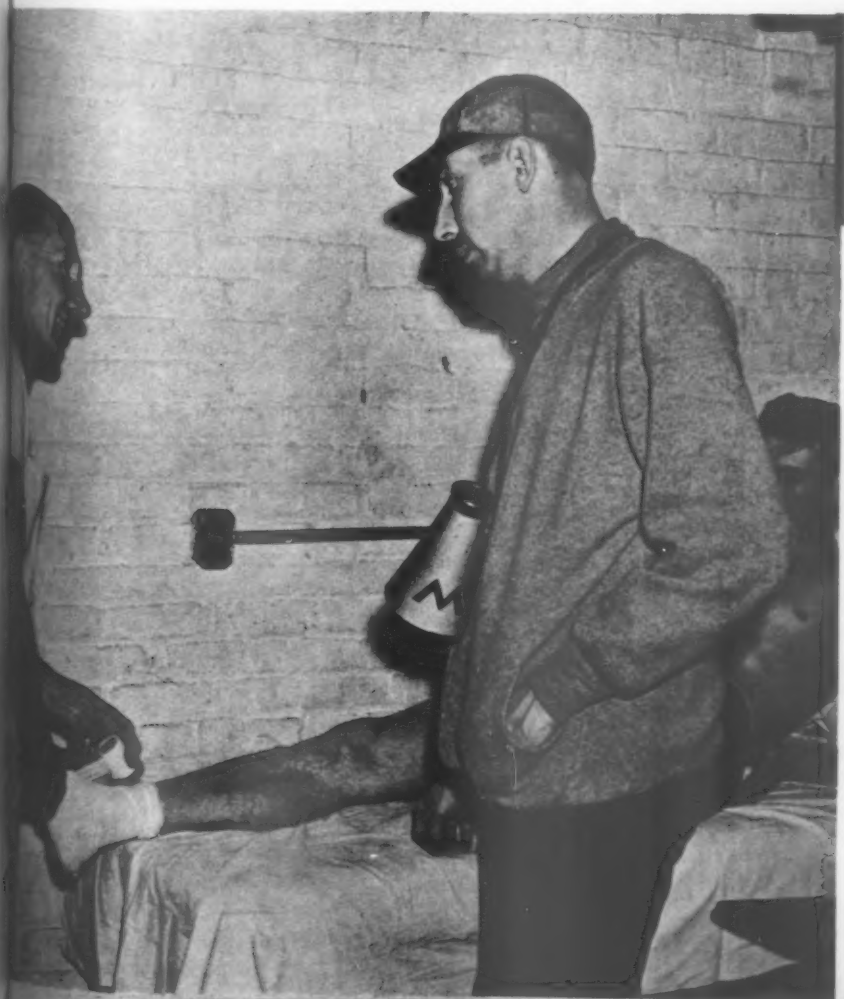
Shoulder balance. (Illustration 10.)

TRAINERS JOURNAL

SECTION

The NATIONAL ATHLETIC TRAINERS ASSOCIATION

FEBRUARY, 1942 No. 6



Official Publication
Of the National Athletic
Trainers Association

Self-Massage and Special Exercises for Home Treatment

Bill Frey

Suggested Hints for High School Coaches in Handling Athletic Injuries

R. E. "Bob", Shelton

Walter Bakke, Trainer
H. E. "Bud", Foster, Basketball Coach
University of Wisconsin

The Allerton, Illinois, High School Student Trainers Team.

THE Allerton, Illinois, High School has a student trainers team of eight boys, four who enrolled last September and four are now being selected for the second semester. To us who know that the enrollment of that school is less than a hundred, this is remarkable. Congratulations to you, Mr. Brown and to your principal Mr. P. F. Pool—Editor's Note.

(Reading from left to right) G. Compton, Victor Brown, Coach, H. Rice, G. Archer, M. Jones.

NEW YORK STATE PUBLIC HIGH SCHOOL ATHLETIC ASSOCIATION

Office of Secretary-Treasurer

Roslyn Heights, N. Y.
January 20, 1942

Mr. John L. Griffith, Editor
The Athletic Journal
6858 Glenwood Avenue
Chicago, Illinois

Dear Mr. Griffith:

I want to commend you and The Athletic Journal for putting between your covers the very fine section "The Trainers Journal."

As you probably know, I am conducting the New York State Athletic Protection Plan which has paid over $16,000 for fall sports injuries in New York this year. In addition, I am acting as the statistician for the athletic injuries as reported by all of the states operating the protection plans, and in that capacity can see the national picture in regard to injuries. I am certain that the dissemination of knowledge coming out of the Trainers Journal in regard to better intelligent care of athletic injuries, particularly of the sprain, dislocation and contusion type, is going to make for better conditioned squads and will reduce immeasurably the more severe injuries which follow incomplete and hurried "healing."

Sincerely yours,

F. R. Wegner
Secretary-Treasurer

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THE
TRAINERS JOURNAL
SECTION

Official Publication National Athletic Trainers Association

February, 1942 No. 6

Officers National Athletic Trainers Association
For 1941-1942

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Office of Publication, Iowa City, Iowa

Is Your Conference Represented?

ON THE opposite page appear the names of newly appointed chairmen of several conferences. As previously announced the National Athletic Trainers Association has grown to such an extent that all business can not be conducted from the executive-secretary's office. These conference chairmen, therefore, will contact the trainers in the member institutions of the conferences. Their first duty is to enroll every trainer as a member of the Association; they will arrange for meetings, and as has been suggested, a convenient time for the first meetings will be the conference track meets this spring. At these meetings the High School Students Trainers Plan will be explained in detail and every trainer in the Association will be ready to assist the high school coaches of his locality in starting the program. Your conference chairman has membership blanks in his possession. Contact him at once. If you do not find your conference and its chairman listed, write the home office. It is possible that no trainer from your conference was a member of the National Athletic Trainers Association at the time the appointments were made. Every conference should be represented, and it is our intention to have all represented. Coaches, athletic directors, doctors, and student trainers are invited to become members of the National Athletic Trainers Association. There is a special membership for each.

Trainers! Here Is a Compliment

AFTER reading the letter from F. H. Wegner, Secretary-Treasurer of the New York High School Athletic Association, will those of you who have this fall assisted in the educational program of the National Athletic Trainers Association, both by contributing articles and by your educational and promotional work in your localities, feel that you have been contributors to a worth-while cause. Will those of you who have not yet wakened up to your responsibilities write the Editor.

UNDER THE SHOWERS

WE ARE very happy to have Lon Mann represent the association as chairman of the Big Ten Conference. Lon is an old hand in the training profession and is well liked by his brother trainers in every part of the country. His teams have played a very interesting schedule these past twenty years and Lon has been with them most of the time. He has several very fine trainers as assistants at Purdue University who have been members of the N. A. T. A. since its founding.

NOW that things have settled down, writes Robert Chambers, head trainer of the famous Duke teams these many years, I will try to write you more often. But with the new duties Chambers has, acting as chairman of the Southern Conference, I fear his letter writing will suffer more than ever. Those Dukes surely kept Robert busy last January first. Hard luck, fellow, more bowls are coming. But Chambers has still another job at Duke, he is the head track coach and his teams held the conference championship in 1941. Maybe it takes a trainer to be a good track coach or a good track coach to be a trainer.

FROM out of the great Southwest comes this big fellow to lead his group of trainers and act as chairman of the Border Intercollegiate Athletic Conference. I know the whole state of Arizona is proud of Tom Gibbings, head trainer at the University of Arizona. Tom reacts like all the other western men whom we have contacted; the job we ask them to do is not too large, nor the time spent doing it wasted. Besides holding down the head trainer's position Tom coaches cross country and track, and the records show that Arizona has been the conference champion every year since 1932. At a future date we are going to ask Gibbings how he does it.

DOESN'T "Mickey" look grand in that bright new uniform. He was recently appointed chairman of the Connecticut Valley Conference. His official name at the United States Coast Guard Academy, located at New London, Connecticut, is H. K. McClernon and, as I understand it, he holds the rating of Chief Pharmacist besides being trainer for the very fine athletic teams the Academy turns out every year. "Mickey" is also the boxing coach at the Academy.

(Continued on page 34)

Self-Massage and Special Exercises for Home Treatment

By Bill Frey
Secretary-Treasurer National Athletic Trainers Association

VERY few athletes of the total number of our boys in athletics have the benefit of the regular services of a trained masseur or enjoy the advantage of the constant advice of a first-class trainer or coach, skilled in the means and ways of massage. Massage plays a very important part in the conditioning of athletes and, therefore, should be used often. We know that it is possible for a person to massage himself, if he knows the various parts of the body that need it most, and the technique to use. If the athlete cannot get professional massage, he should, at least, enhance his own chances of success by mastering the art of self-massage. In the same way every athlete should make himself acquainted with those exercises which also contribute to his success and know how to care for himself in different weather conditions. This last statement applies to track and baseball.

It is important that the athlete warm up with a few free movements before starting the massage. Then he should apply an oinment or rubbing mixture to the hands to reduce friction.

Massage of the Feet

Place the foot on a chair or stool and commence rubbing downwards with the palm of the hands, working on each side of the foot from the ankle to the toes. The movement should be finished by drawing the thumbs under the ankle bone and up to the Achilles tendon, the movement being quickened until friction is obtained and real warmth created. Next, rotate the toes, flexing them forward and backward and then cushioning them between the hands. Finally, massage the sole of the foot and the ball of the big toe with the tips of the fingers.

A short exercise should follow in which the athlete, standing erect upon one leg, holds the other leg out firmly and rotates the foot in alternate circles, left to right, then right to left, with a pushing movement of the toes outward as a finishing movement of the exercise.

Massage of the Calf

Place the foot on a chair or stool and bend well forward. The fingers should make contact with the calf at the ankle bone and should be drawn firmly upwards, care being taken that constant contact is maintained. In the next movement

High School Trainers Lesson No. 6

(assuming that the right leg is being massaged) place the left hand under the calf with the fingers just above the outer ankle bone and draw the hand up to the inside of the knee. Next, place the right hand under the calf with the fingers just above the inner ankle bone and draw the hand up and across the calf to the outer side of the right knee. Place the fingers on the side of the calf muscle, using both hands, then roll and knead the muscle until it feels soft. Finish the lower leg by massaging the front or shin bones, using an upward movement.

This same massage may be used if cramps appear in the calf muscle. It is not often that athletes pull any muscles in the lower leg, but in case they do, it is important that the proper tape be applied before the boy is allowed to return to the contest. In some cases tape has been the difference between winning and not running at all. If you apply tape to the leg, always remember that you are applying a *tape muscle* and the tape should do the same job as the muscle did, not as efficiently, but in the same manner.

Massage of the Knee

Sit in a chair, with the leg to be massaged in slightly bent position. With the palm of the hand, gently rotate the patella (knee cap) situated in front of the knee, in the tendon of the quadriceps extensor femoris muscle. Immediately after this, with both hands compress the knee in a squeezing action. Next, with the hands maintaining a firm pressure on either side of the knee, rotate them in opposite direction. When this has been done place the finger tips, pointing inwards, in the cavity under the knee and work in small circles in opposite directions, lightly but briskly, stroking upward the whole joint. Then flex and extend the leg several times.

These exercise and massage suggestions may also be used to great advantage on knees that have been hurt in football. The massage will help bring them back to normal and the exercise will make them strong again. Exercise on football knees should not begin too early after taping, but massage may be given as soon as the athlete can stand to have pressure applied.

Massage of the Thigh

From a sitting position begin the massage of the thigh with the thumb and fingers, using both hands, exerting a deep, upward pressure on either side of the thigh until real warmth is created. A rapid rolling of the muscle substance on each side of the thigh follows, and as each section or portion of a muscle is released another must be picked up, so that the whole movement may be made continuous.

The upper portion of the thigh needs special attention. Using the ball of the thumb, rotate deeply at the outer side. The fingers give a similar rotation on the inner side, but with far less degree of pressure. Place the heel on another chair, so that the thigh muscles may be fully relaxed, while the two hands roll the whole area and mass of muscle of the thigh, until it feels soft and loose around the thigh bone. In most of the strains that are common in the thigh, success of healing them seems to depend largely upon increasing the blood supply. Use, therefore, fomentations, infra-red, diathermy or hot packs along with light massage on the affected parts. If a muscle is ruptured in this area, great care must be taken before the athlete is allowed to return to the contest. Precaution should include tape for the duration of the athlete's year. Recurrence is worse than the original rupture or tear.

During the running of the 1938 Drake

Relays, Fred Wolcott, the great hurdler used a tape bandage on the thigh muscles to prevent a recurrence of a muscle rupture that he had received in the Kansas Relays a short time before the Drake meet. He not only won the race but set a new world record. This could never have been done, if he had not had a good tape bandage applied before the race. Most of these muscle ruptures or tears come about in sprinters. They will be running full speed down the track and suddenly they will pull up and stop, or in some cases fall face down. Great pain is experienced in the thigh muscles and lack of power comes on immediately. Some of these men cannot continue to walk off the track because of the pain.

Many theories have been exploded as to the cause of this condition, but my own pet theory is based on the following: If you will trace the runner's athletic history, you will find that he has either had a light case of muscle tear or rupture one or more times before the final one has taken place and he should never have been allowed to run without protection; or, he has failed to warm up properly, failed to massage his muscles a little before the contest; or has had too much practice and is completely exhausted before the contest. It is also possible that his food intake has not been enough to supply the muscles with the amount of power to make them operate properly. Lack of salt intake may cause some of these conditions. It is hardly possible that the fault is lack of running or practice. Some ascribe the cause of these injuries to track conditions, but pulled muscles have happened on the finest tracks in the world. Others claim wood tracks may cause pulled or ruptured muscles because of the hard-running surface. We, also, have trainers who feel that flat indoor tracks contribute many muscle injuries. Before we pass on to another type of exercise and massage, it is in order to say that many good track men would not be injured, if they warm up carefully, massage themselves properly and notify the coach, in case they feel a pain or pull in any of their muscles.

Massage of the Back

Stand erect and place the thumbs on either side of the back, so that you can massage the muscles on the small of the back with a slow, steady, rotary movement. Bring your fingers from the opposite side to the center of the back in deep, sweeping movements. In the next movement, let your thumbs steady your hands, so that the fingers may be used to give friction. Finally, partly close your hands so that there is a sort of cup between the first finger and thumb, and with the cup on each hand, tap yourself smartly all over the region of the small of the back.

To exercise the back muscles stand erect with hands over the head; start by swinging your arms to the left in a downward movement, coming as closely as possible to touching the toes; continue upward to your right until your hands are directly over the head once more. Starting from this same position, bend backwards as far as possible, then continue the sweep straight forward until the toes are touched, returning to the starting position.

Many trainers have their own pet ideas on exercise and massage. Most of them agree, however, that the two are very important in conditioning athletes. Both can be overdone.

Massage for Nervousness

Massage is one of the best means for overcoming nervousness. It is not in the book for a trainer or coach to merely tell a boy to stop the jitters, he must do something about this particular case. Light massage will do the trick. Many track men have asked me to rub them just before a big meet. I did, but I used plenty of good common sense in how much to massage them. Some of them won, some of them did not, but it would be impossible to give positive indications that the massage did or did not do the trick. I have always welcomed high strung athletes in my camps, but have found that they must receive special attention. Who in the athletic world has not run up against a tough problem, and who in the same world would trade the tough ones, with plenty of power under their skins, for the mild easy type of athlete. Give me the athlete that runs a temperature and is jittery, and I will show you a box office attraction. Hard, deep massage is not needed to bring about desired results. Light, smooth massage is much better.

Examination Number 2

1. Why should great care be given to a knee that has been injured?
2. How long after a knee injury has been received should it receive attention?
3. What should you be doing and thinking when you apply any tape bandage?
4. For what type of knee injury is the tape bandage shown in illustrations 1, 2, 3, 4, 5, 6 in lesson number 3 used?
5. Have you observed the popliteus muscle in an anatomy book?
6. Why does basketball require a different set of preparatory exercises from football?
7. How can you strengthen the hands and wrists?
8. How can you strengthen the waist line? Describe the exercise used.
9. Define several ways athletes may relax before a contest.
10. Have you read the article, "Relaxation and Simple Living"?
11. Why do you think Bernie Bierman, Minnesota's great coach, always makes his men walk from the dressing room to the playing field?
12. Why do basketball players take a deep breath and let their shoulders drop just before shooting a free throw?
13. What is meant by "Simple Living"?
14. How much sleep does an athlete require?
15. Why should we all eat slowly?
16. What is the first rule in all sports if one aspires to be good?
17. Name three uses for the infra-red lamp.
18. Are all infra-red lamps of the same voltage?
19. Why are bicycles better for athletes than motor cars?
20. How many hours before a game should the game meal be eaten?

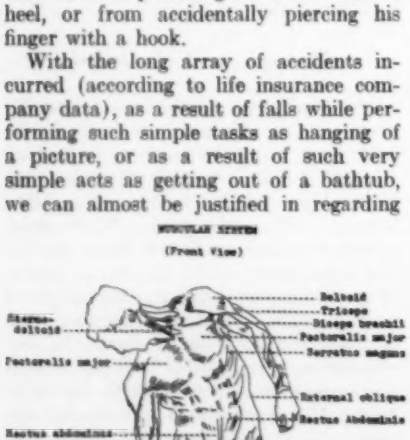
Suggested Hints for High School Coaches in Handling Athletic Injuries

By R. E. Bob Shelton
Head Trainer, University of Colorado

IT is hard to imagine an interesting and worth-while program of sports which would not involve the risk of some injuries to the participants. To insure against all possible injuries would entail the elimination of all sports involving running, jumping, twisting, throwing, batting, climbing, vaulting, dodging, sliding, and personal contact. Quite a picture!

Football, boxing and wrestling are most commonly regarded as particularly dangerous games, but investigation would probably show that there are in the course of a year more injuries in baseball than in all these three combined. To offset this, I must say that a great many more people play baseball, yet when we consider the hundreds of thousands of accidental injuries which occur during a year in the ordinary activities of life, the number of injuries incurred through sports becomes much less appalling than at first casual glance. Even the angler who goes for a quiet evening in the woods may contact blood poisoning from the blistered heel, or from accidentally piercing his finger with a hook.

With the long array of accidents incurred (according to life insurance company data), as a result of falls while performing such simple tasks as hanging of a picture, or as a result of such very simple acts as getting out of a bathtub, we can almost be justified in regarding the athletic field as a haven of safety,—and that without resorting to the sophistry of Mark Twain, who considered being at home in bed as extremely dangerous, because more people die in bed than in any other place.



I could hardly subscribe to the idea of abolishing sports, because of their element of danger, for every injury in sports is a matter of concern, especially when we know that most of these injuries may well have been avoided.

In the first place, those who are engaged as coaches, instructors, or directors of sports ought, at all times, keep in mind their responsibility for the safety of the athletes in the prevention of accidents. It is no imposition to expect this from those officials, and it is almost criminal for them to shirk this duty.

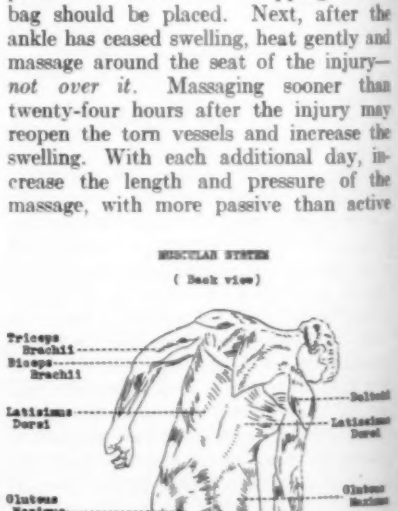
The contestant, too, has his responsibility, even to the extent of such simple acts as attention to equipment and the humble little contrivance, the shoe lace. That, however, does not mitigate the responsibility of the coaches and instructors in the teaching of techniques, such as to render them less hazardous, both as to type of activity and manner of executing them. This includes, also, such situations as unevenly matched contestants or teams. In these cases the matches should not be permitted to go on and the contest should be forfeited.

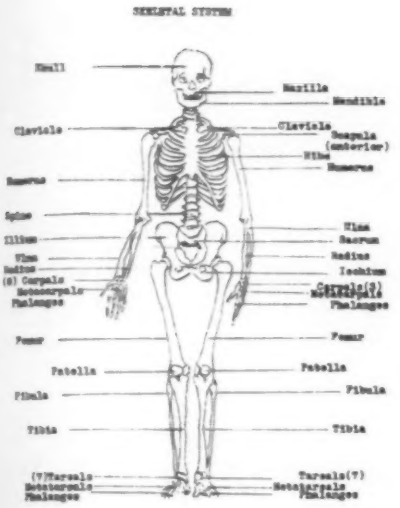
As to the nature of the injuries incurred on the athletic field or during the physical education period, they may be classified as cuts and scratches, sprains, pulled tendons or strained muscles, dislocations, broken bones, and concussion of the brain.

Sprains: Any weight or force which causes movement in the joint beyond its natural limitations may stretch, tear, or pull loose the tissues (ligaments) which surround the ends of two bones and hold them together. Sprains are more common in the ankle joint, because of its function in supporting the body and its vulnerability during activity.

Sprains may be avoided, if athletes would cultivate skill in the use of the body and limbs, if they would learn to fall properly, and if they use only properly fitting equipment. This is especially true of shoes. As soon as a sprain occurs, however, as in the ankle, remove the shoes and allow as much bleeding in the areas as possible, and of course the resultant swelling. The ankle should be soaked as early as possible in *ice water.* Sprains, one must remember, are always associated with a tearing. If they are severe, hemorrhage occurs in the surrounding tissue and an immediate puffy swelling results. Cold is suggested rather than heat, because cold causes a reflex contraction of the vessels and reduces the bleeding. Hemorrhage due to the sprains of the ankle are checked by swelling and the resultant pressure they themselves produce.

In case the sprain is severe with much swelling, the patient should be put to bed with the injured ankle somewhat elevated and wrapped lightly with towels, soaked in a cold solution such as boric-alcohol and saturated solution of boric acid or plain salt. Over this wrapping an ice bag should be placed. Next, after the ankle has ceased swelling, heat gently and massage around the seat of the injury—*not over it.* Massaging sooner than twenty-four hours after the injury may reopen the torn vessels and increase the swelling. With each additional day, increase the length and pressure of the massage, with more passive than active





movements of the ankle. Rub the ankle under the rays of a therapeutic light, always in the direction of the knee.

When the swelling and soreness of the ankle have begun to abate, so that the ankle can function in voluntary motions, tape the ankle carefully, using the Gibney bandage. This bandage will become loose as the swelling leaves the ankle; soak the ankle in alcohol or hot water after the tape has been removed. Gasoline or ether will help to remove the tape. For description of the Gibney bandage see page 35 October issue of the Trainers Section.

Bruises are sometimes severe, painful, and disabling because the blow injures tissue cells, breaks the capillaries, and lacerates the nerve fiber. The black and blue effects from a bruise are due to the infiltration of blood into the tissue from the broken blood vessels. Even severe bruises ordinarily need little treatment except rest and protection.

Blisters: For their prevention use a solution of tannic acid, pickle brine, 10 per cent solution of benzoin compound. Thin this with alcohol if it becomes too thick. Paint the foot thoroughly, let dry, cover with powder (zinc stearate). Paint twice a day for the first week of practice.

Athlete's Foot: This is a fungus growth and will breed on anything. The feet provide favorable conditions for its growth (darkness, and moisture). Prevention: Use 15 per cent of salicylic acid. Scrub with cotton and apply this solution. Then cover the foot with vaseline or some soft salve.

Three types of blisters are: (1) water, (2) blood, (3) pus.

Water Blister: Make a hole under the blister with a sterile needle. If the water is clear, do not remove the skin, but paint the skin with a tested remedy and cover with a thin pad.

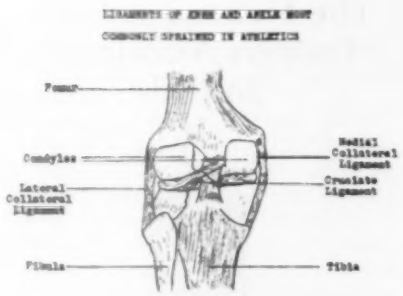
Pus Blister: If this type occurs, dissect the skin and use a wet dressing composed of witch hazel, glycerine and alcohol,

THE charts accompanying this article are necessarily reduced because of limited space. They, however, suggest the importance to trainers, to coaches who are entrusted with the training of athletes in addition to coaching techniques, and to the student trainers, of knowing the muscle and skeletal systems if they are to do their training jobs scientifically. In connection with the charts, may we call your attention to an excellent muscle chart furnished by Absorbine, Jr. as announced on page 38 of this issue of the ATHLETIC JOURNAL.

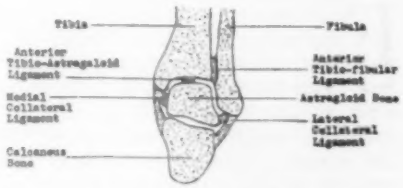
The accompanying selected list of muscles most commonly injured in athletics, as furnished by Mr. Shelton, should be studied carefully by readers of this publication.—Editor's Note.

MUSCLES MOST COMMONLY INJURED IN ATHLETICS AND ACTION INVOLVED

1. Trapezius
   Movement of Scapula; Erection of Head.
2. Latissimus Dorsi
   Extension, adduction and inward rotation of humerus.
3. Pectoralis major
   Extension, adduction and inward rotation of arm.
4. Biceps brachii
   Flexor of arm and forearm.
5. Triceps brachii
   Extension of arm and forearm.
6. Gluteus maximus
   Extension and outward rotation of thigh.
7. Sartorius
   Flexion and outward rotation of thigh.
8. Quadriceps femoris
   Extensor of leg.
9. Adductor magnus
   Adduction, flexion and inward rotation of thigh.
10. Tibialis anterior
    Dorsal flexion of foot and elevation of its medial border.
11. Gastrocnemius
    Plantar flexion of foot and flexion of leg.
12. Peroneus longus
    Plantar flexion and aversion of foot.
13. Sternocleidomastoid
    Flexes head.
14. Serratus magnus
15. Deltoid
    Adductor of head.
16. Exterior oblique
    Compression of abdomen cavity; flexion of trunk.
17. Rectus abdominus
    Compression of abdominal cavity and flexion of trunk.



Ligaments of a normal left knee
(Posterior view)



Ligaments of a normal left ankle

or use S.T. 37, which is very good. The main object of this treatment is to heal the pus blister from the bottom to the top.

Blood Blister: This third type is the most severe of the three and requires much more attention. Clean off; apply wet dressing or ichthyol enough to cover the area and tape on. If the area becomes red, *look out*, this is dangerous. By the use of ice packs the local infection will be held in one area. By the use of Epsom salts ($MgSO_4$), the infection may be prevented from spreading. If the infection is severe, call a doctor.

The types of wounds are: (1) incision, (2) abrasion, (3) laceration, (4) puncture wounds.

Incision: An incision is a clean cut hole like that made with a spike, shoe, or a knife. This is not so severe, and pulling together the skin or stitching it will do the job well. Use wet dressing as indicated before.

Abrasion: Better known as "strawberry," this wound is incurred if an athlete slides on some surface. Cut a doughnut large enough to completely circle the skinned area, apply wet dressing. Foam rubber is satisfactory to cover the area.

Laceration: This type most generally occurs over the Tibia bone and is the most difficult type to cure. Lacerations are caused by a person whipping his legs along the shin bone of another player. There is a tear of the skin and good medical attention is needed. Sunlight and hydrogen peroxide (H_2O_2) are good sterilizers.

Puncture wounds: Do not suture. Beware of serious infection.

Disinfection for dressing room, hypochlorite ($HoCl_2$), 2 per cent is a good solution; creosoted glass to a bucket of water is good with which to mop the floor of the dressing room and shower.

The National Athletic Trainers Association Insignia

FOR some time we have been working on an insignia for the association that may be worn by its members. This will be made up as a key or as a pin, gold for senior members; silver for junior and bronze for associate members and student trainers. In all keys and pins, the insignia is the same. The prices are as follows:

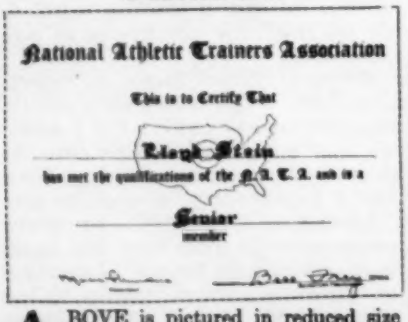
	Key	Pin
1/10 rolled gold plate (Senior)	$4.00	$2.50
Gold plated on sterling (Senior)	3.00	1.75
Sterling (Junior)	2.50	1.75
Bronze (Associate and Student Trainers)	2.00	1.50

If engraving is desired, the cost will be three cents per letter.

Orders should include the full amount of the key or pin and ten per cent for retail sales tax and shipping charges. Purchases must be made through the home office of the National Athletic Trainers Association, Iowa City, Iowa.

—BILL FREY, Secretary.

The National Athletic Trainers Association Certificate


National Athletic Trainers Association

This is to Certify That

Lloyd Stein

has met the qualifications of the N. A. T. A. and is a

Senior

member

ABOVE is pictured in reduced size the certificate issued by the National Athletic Trainers Association. This certificate, in a size suitable for framing, is issued to Senior, Junior and Associate members. Student trainers, upon completion of the four-year training course as outlined by the Trainers Association will receive a certificate. All inquiries regarding the certificates should be addressed to

—BILL FREY, Iowa City, Iowa.

Under the Showers

(Continued from page 29)

On the cover of the Trainers Journal we give you Bud Foster and his trainer Walter Bakke of Wisconsin University. This picture brings back memories to your editor as I trained Bud his last year of college basketball. Last year when his team won the National Collegiate Championship, Bud proved that he has had plenty of experience with champions, the last team with which he played in college won the championship of the Big Ten. The date 1929.

Trainers who attend the Drake Relays will have a chance to view some of Lloyd Stein's work. He has a set of motion pictures that he has made of various injuries which have popped up in the training rooms of the Minnesota football team. Stein has held the office of president of the National Athletic Trainers Association for the past two years.

Beryl Taylor, trainer at Iowa State College writes that the new defense plan is keeping him plenty busy. He is an instructor of first aid, both at the school and also in the territory where he lives. Trainers, why not offer your services to the home defense program; your background is perfect for that type of work and you will be doing your country a great service.

J. W. Begala of Kent State University has the right idea. When notiified that he had been appointed chairman of the Ohio Athletic Conference he said he would like to make a trip around the state and meet the other trainers personally. Nothing is better than personal contact. When your teams are visiting other schools, make it a point to get in touch with the trainer of the school. Friendships cannot be bought, but they may be promoted.

Tape Topics

Tape Topics is a column to which coaches and trainers are invited to contribute either in the way of questions or worthwhile suggestions that would help others.

Question: Every year one or more of my basketball boys is afflicted with boils. What are the preventatives and treatments.

Answer: Every training room has the uninvited visitor. Boils, every year! They are common with basketball players, occasionally found on football squads and rarely in baseball clubs. Friction and excessive perspiration are the probable causes. Plenty of good soap in the showers and clean playing equipment are the best preventatives. Some of the practice outfits I have seen used by athletes are so dirty that most any disease may show up. In treating the boil, use plenty of hot packs of saturated boric acid solutions, under an infra-red lamp. The heat from

Annual Meeting National Athletic Trainers Assoc.

The annual meeting will be held for the first time this year in two sections. Eastern division meeting at the time of the Penn Relays, Western division meeting at the Drake Relays.

Open meetings for all interested in training problems. High school coaches are urged to attend the lectures and demonstrations. Closed meeting for election of officers.

All trainers are urged to notify the home office of their intention to be present so that arrangements for the programs may be made.

Programs and meeting places to be announced in March issue.

ROLL AWAY YOUR FOOT TROUBLES

LANG FOOT AND ARCH NORMALIZER

For use after a foot or ankle injury, when proper time arrives for exercise. Now adopted for training room equipment by Universities of: Alabama, Georgia, Mississippi, Detroit, Kansas, Texas, Pennsylvania, Toledo, Mercer, Harvard, Ohio State, Oklahoma, Georgia Tech, San Jose, St. Benedicts, U. S. Military Academy, L. S. U., State College of Washington, Rensselaer Poly. Inst., Nott Terrace High School, Edinburg High School, Washington Redskins Pro. Football Club. Price, Ten Dollars. Mail order or send for free circular literature to:

TRAINER'S JOURNAL
Iowa City, Iowa

the lamp will give you a hot pack for hours. A frequent moistening of the towel or cotton over the area of the boil with the boric acid solution will protect the area from becoming burned. This procedure will bring the boil to a head rapidly and will allow you to remove the core. Before the boil opens, shave the surrounding area, and apply tincture of iodine. Many times a boil may be brought to a head with a poultice. There should be great precaution in wiping off all drainage of pus around the boil area. It is advisable to use an ichthyol dressing to keep the boil open so that it may drain for several days. Change the dressing each day until the open wound looks free from pus. Too many times the wound is allowed to close before all the infection is out.

Question: I have often heard that athletes should have much more to eat than an average working man. Have you any information on this subject.

Answer: The subject is well worth writing about but would require too much space for this column. We will have some articles on this subject before the end of the year. Athletes do not need so much more food but food of a higher caloric content, a diet balanced and loaded with quick energy food. It has been claimed that athletes who are practicing every day for two hours should have a total count of five thousand calories each day. That does not mean that you should pick out the food with the highest caloric count and use that one exclusively. Every diet should contain the following list of foods. Two eggs; four vegetables, one of which should be raw; two servings of meat; one glass of milk; three slices of white bread; one and a half pats of butter. To assure the proper nourishment of the body, whether to put on weight, or improve the general physical condition, the body must be properly nourished. The diet must be adequate in all respects, the proper amount of calories and the proper distribution of protein, calcium phosphorus, iron, copper and vitamins. Caloric requirements for hard exercise may be determined by using twenty-three calories times the number of pounds the athlete weighs. Example: If the athlete weighs 200 pounds, 200 times 23 or 4600.

Question: The track season is about to begin down here. During the regular season one or more of my boys receive spike wounds. How should they be treated?

Answer: Spike wounds, no matter if they happen during track or baseball, should have the immediate attention of a doctor. There have been hundreds of wounds of this type that have fully recovered without antitetanus serum injection, but I have always felt that the one case that did not receive this treatment would be the one that might result in lockjaw. Play safe on every one of these wounds and have them treated by a doctor.

Question: Our school is co-operating in the trainers course that was started this year. We have four boys who are learning to become trainers. Would you send us lessons on this work? We think it is a very fine project.

Answer: We are very happy to hear that so many high schools are using the High School Trainers Program, sponsored by the National Athletic Trainers Association. To date, we have only the lessons that are published in the Trainers Journal for the student trainers. Later on we may mail each high school that is using the course a set of instructions in addition to the ones published each month. We had an idea that the two or three articles printed in each issue of the Trainers Journal this year would be sufficient material for the student trainers their first year. Since the course will be continuous over four years, here is a good time to suggest that students taking the course this year should preserve their copies, possibly remove the Trainers Section from the magazine at the end of this year, so that the four-year course may be bound in one complete volume at the end of the course. My suggestion now is that if any copies of this year are missing, you communicate with me at once, so that missing numbers may be supplied. Going back to your request for more material, we are certainly interested that your boys are eager for material.

—Bill Frey.

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Warming-Up

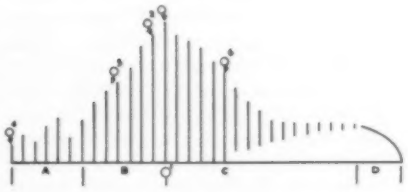
(Continued from page 18)

amount of energy expended by the muscle, in maintaining its contraction, will be relatively too large, and again the efficiency will be low. The optimum rate is somewhere between as fast as a muscle can contract and as slowly as it can contract.

In Zoethout and Tuttle's[4] *Revised Physiology* much space is given over to "treppe," and to the effect that exercise will have on treppe. Treppe is the result of a few contractions of a muscle which has had repeated stimuli. At first the contractions and the relaxing phases are uneven. These uneven contractions are due to the great amount of internal resistance which antagonizes and diminishes the outcome of the muscle machine. These contractions tend to increase more evenly in length "B" until they reach maximum contraction (0-0'). Following this profile there is a setting in of fatigue which is due to the fact that the muscle is stimulated before it has time to relax; consequently, the contracture produces effect "C" which is followed by complete fatigue that sets in at "0." Chemically, fatigue is the result of the accumulation of lactic acid. In warming up before an event such as the standing broad jump, shot put, etc. where one explosive force is to be used, an individual should warm up to 0^2. Theoretically, his next contraction would be his best, but if an individual desires to extend his energies over a longer period (two-mile run), and if he desires to do his best, his warm-up will consist of period 0^4 to 0^3. This fact would permit the individual to get in profile 0^5 to 0^6 which is the period of optimum rate for the required time. As treppe increases, circulation improves; viscous fluids of the muscles become thinner; the tissues become more permeable; the body temperature rises, and irritability increases within limits.

There is no known criteria for determining the amount of warming-up. Individuals must determine this themselves. A consideration, however, must be made of the known factors which were set forth by the writer earlier in this article.

The extent of warming-up depends upon the intensity of the exercise which is to follow, and upon the physical condition of the individual. Intensity and duration of exercise are the essential factors in increasing the pulse rate. In performances of short duration, the pulse rate does not reach its maximum. The pulse rate does not rise immediately to its maximum, but after an initial rise, the change proceeds more slowly. The severity of the exercise will make all the difference in the world. The increase in the



initial pulse rate may be brought about by merely mentioning exercise.

"There can be no doubt that an accelerated pulse rate favorably influences the performance. The varied performances in an individual's career may explain the high correlation of exercise with pulse acceleration. This acceleration seems to be a conditioned reflex which, like other functional changes, sets in at the beginning of exercise."[5]

During exercise, the volume flow of blood is in some degree constant, but there must be an increase of the amount of blood which flows during exercise over that amount which flows during rest. The flow during exercise is in proportion to the extent of the strenuousness of the exercise. It has been shown that minute volume increases considerably during the first few moments of exercise. This observation is easily understood because the pulse rate also increases immediately. At the beginning of exercise there is a slight enlargement of the heart, but this enlargement disappears after a brief period. There is a considerable increase in blood pressure at the onset of exercise. This increase in blood pressure is in proportion to the type of activity.[6]

Grollman[7] indicates that active muscular movements result in a much greater increase of the cardiac output than do static or slow movements. This action, he explains, is due to the greater pumping action of the muscles in the former exercise, an act which causes a greater return of venous blood to the heart. He indicates a number of important changes which occur in mild exercise. Of this number, the most important ones are dilation, opening of capillaries, and increase of venous return.

"We must conclude that the cardiac output and the cardio-vascular response to muscular activity in general are independent of the oxygen consumption when different groups of muscles are involved."[8]

It has been known for some time that the cardiac output will be great or small according to the "training" of the individual.

"The better co-ordination of movements which results from training leads to an economy of movement and a lesser return of blood to the heart for a given amount of work."[9]

In moderate exercise the properties of arterial blood differ in no important respect from those of resting blood. Hemoglobin concentration in blood and concentration of protein in serum increase five or ten per cent in mild exercise. Evidently, exercise, especially under emotional stress, calls forth reserve hemoglobin from the spleen under some conditions. The properties of arterial blood will vary with the intensity of the exercise.

Working muscles contain more water than resting muscles. The greater the activity, the greater the water content of the muscles, according to Barcroft and Koto.[10] As the warm-up period becomes intensified, the blood concentration increases, a process which is due to the loss of water through perspiration from the circulating blood. There is a direct proportion of the water lost by perspiration to the increased number of red corpuscles and to the per cent of increase of hemoglobin. The rise of temperature accompanying muscular activity works to an advantage because it leads to a concentration of the blood and increases the oxygen capacity of this fluid. The secretion of urine is slowed down as the activity gains in intensity.

There is no doubt that the H. ion concentration of the blood is one means by which the supply of oxygen to the muscles is brought into reaction with their needs during exercise. But the greater C_H of the blood produces this effect mainly through its direct action on the tonus of the arterioles and of the capillaries, and on the rate of dissonation of oxyhemoglobin, but only to a limited extent through the intermediation of the central nervous system. An adequate increase in the local H. ion concentration of the blood flowing through the active muscles simultaneously lessens the tone of their arterioles and of their capillaries; moreover, it increases the rate at which the blood gives up its oxygen to the muscles. Sufficient rise in the C_H of the arterial blood stimulates the vaso-motor center and tends to raise the mean arterial pressure. These processes bring about a larger flow of blood through the active muscles, thereby enabling them by their mechanical action to increase still more the venous inflow to the heart and its out-

4. Zoethout, William D., Tuttle, W. W., *A Textbook of Physiology*, The C. V. Mosby Company, St. Louis, 1940, pp. 104, 216.

5. Herxheimer, Herbert, ***The Effects of Exercise on Organs and Functions***, 1933. Translated by Baumgartner, Albert J., Master's Thesis, University of Iowa, 1936, p. 5.

6. Ibid.

7. Grollman, Arthur, "The Effect of Mild Muscular Exercise on the Cardiac Output," *Am. Jour. of Physiol.*, Jan., 1931, 96, 8-15.

8. Ibid, p. 11.

9. Ibid, p. 13.

10. Barcroft, J., and Koto, T., "Effects of Functional Activity in Striated Muscles and the Submaxillary Gland," *Phil. Trans., Roy. Soc.*, London, 1916, B. 207, p. 149.

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put per minute. With a rather intensive warm-up the degree of change, both in reaction and in CO_2 combining capacity, increases rapidly with each small increase in the amount of work.

The CO_2 capacity (bicarbonate of the blood) is diminished at a time (second minute of exercise) when the CO_2 tension is increased and when the respiration is inadequate to remove all the CO_2 which is produced. The changes in CO_2 capacity may be explained by the accumulation and by the removal of lactic acid, two processes which occur simultaneously but at a different rate during and after muscular exertion. CO_2 capacity continues to fall until the rate of removal of lactic acid becomes greater than the rate of accumulation.[11]

The utilization of oxygen (the amount diffusing from each unit of blood in the tissues) is determined by the total oxygen diffusion through the systemic capillaries and by the velocity of the blood stream. Meakins and Davis[12] have demonstrated that with an increased blood flow, as is the case during a warm-up period, less oxygen is given off from each unit of blood. The greater the velocity, the longer will be the volume of blood to share the incoming oxygen and the less will be the portion of each unit of blood. The hyperpnea of exercise may also raise arterial tension by increasing the alveolar area. Bohr[13] found that the hyperpnea of exercise produces a longer mean alveolar volume, and he suggests that it is a mechanism for securing more oxygen. If there is a longer volume which is accompanied by a stretching of the alveolar membrane, a possibility suggested by M. Krogh,[14] then the membranes become thinner and more permeable to oxygen. Early in the warm-up period, diffusion improves more rapidly than the circulation rate, and so the arterial content rises. Following short periods of vigorous muscular exercise, remarkable changes occur in the acid-base equilibrium of the blood. The CO_2 combining capacity is greatly diminished; the arterial CO_2 tension is reduced, and the reaction of both arterial and venous blood becomes less alkaline. The degree of change varies considerably in different normal individuals. The change in CO_2 capacity is accompanied by an increase in the concentration of lactic acid. The observed increase in lactic acid is compared with that calculated from the change in CO_2 capacity.

Those investigators who measured the blood pressure during the warm-up period found a considerable increase at the beginning of exertion. The first experiments indicated an arterial pressure increase of 50 to 60 mms. mercury. Later research indicated that the pressure increased according to the amount of exertion.

A distinction must be made in static, mixed static, and dynamic warming up. Any kind of exercise that brings about a temporary halt in respiration, such as leg raising or weight lifting, will necessarily produce a val-salva effect; therefore, an accurate picture of the behavior of blood pressure cannot be given. The less intense the exercise, the lower the blood pressure. The diastolic blood pressure increase is much less than the systolic. There may be a decrease of the diastolic blood pressure which may hover near the zero mark during intensive warming-up. It is a known fact that the more accustomed an individual is to an exercise, and the easier it is for him, the less is the increase in blood pressure. The importance of training conditions is known to be a determining factor in the rise in blood pressure.

Even a suggestion of exercise during hypnosis brings about only a slight increase in blood pressure. It is assumed from the statement immediately above, that psychic influence is not the principle cause of blood pressure increase during light and during heavy exercise. The minute volume of the heart is considerably increased by exercise. It is extremely important to associate the increase in pressure with the increased velocity of the blood stream, but it must be remembered that, at the same time there is an increase in velocity, there is an increase in the dilation of the blood vessels in the periphery of the working parts.

In the case of an aged person, it is common knowledge that the blood pressure rises higher and falls more slowly during the rest period following warm-up. In higher altitudes the increase in blood pressure is also apparently greater.

The increased venous pressure is dependent on the extent of exertion. The venous return becomes greater as a result of the appearance of depot blood in the circulation, and of a pumping action on the veins exerted by the contracting muscles. The centrally located veins are also influenced by the motion of respiration. Venous pressure and the activity of the heart are closely associated. Since the pulse rate does not increase so rapidly as the venous return increases, it is to be expected that there will be a peak in the venous pressure at the beginning of exercise. During exercise the colon may experience a considerable loss of blood. In the course of moderate exercise the volume of blood rises almost to its maximum value. During exercise the vessels in the active muscle area are enlarged. This enlargement is due to local chemical and to

11. Baer, D. P., Himwich, H. E., "Studies in the Physiology of Muscular Exercise," (Series), *Journal Biol. Chem.*, Baltimore, 1923, pp. 55, 495, 539.

12. Meakins, J., and Davies, H. W., "Observations on the Gases in Human Arterial and Venous Blood," *Jour. Path. and Bact.*, 1919-20, 23, p. 451.

13. Bohr, C., "The Functional Change in the Medium Temperature of the Lungs," *Deutsch. Arch. Klin. Med.*, 1907, lxxxviii, p. 385.

14. Krogh, M., "The Diffusion of Gases Through the Lungs of Man," *Jour. of Physiol.*, 1915, 49, p. 271.

local reflex influences. There is a pronounced increase of circulation in the capillary surface during exercise.

There is a marked increase of the red corpuscles through exercise. The red corpuscle increase varies with different locations on the body. Various results have been reported concerning the behavior of erythrocytes. Some investigators have reported an increase; others have reported no increase, but it is generally agreed that there is an increase in erythrocytes, with the number of the increase depending upon intensity. In all cases following such exercise there is an increased arterial oxygen content, and apparently there is a greater saturation of hemoglobin in the arterial blood. In 1915, Boothby and Berry[15] noted that there was an increase in the number of red blood corpuscles during exercise, a fact which had been known for some time. As a result of exercise, both oxygen content and oxygen capacity rise. It is significant that increase in content is always greater than that of capacity. By observation, however, a higher saturation of hemoglobin is indicated. The increase is possible on account of the fact that hemoglobin in the red corpuscles is not completely saturated when an indvidual is at rest; however, the per cent of change in saturation after exercise is relatively slight. There is also a short rise in arterial oxygen content during exercise. Investigators have proved too that there is an increased number of blood platelets according to the extent of warming up.

The white corpuscle increase in the blood is due to the increased number of neutrophiles and of lymphocytes. Investigators have found that during exercise the greatest increase in the number of white corpuscles takes place in the lymphocytes. Tuttle[16] has shown in his study concerning the leukocyte count after exercises of different intensities that there is an increase of leukocytes, but that this increase depends upon the intensity of the exercise.

"Exercise within the limits used in this study causes an increase in the number of leukocytes in the circulation blood. This increase varies directly with the severity of the exercise. The number of leukocytes in the circulating blood varies directly with the heart rate. This suggests that leukocytosis due to exercise is probably caused by the washing out of the cells from areas which tend to be stagnant; this brings them into peripheral circulation."

Emotions play a large part in muscular activity when conditions which are conducive to the excitement of the adrenal glands are present. The adrenal secre-

15. Boothby, Walter M., and Berry, Frank B., "The Effects of Work on the Percentage of Haemoglobin and Number of Red Corpuscles in the Blood," *Am. Jour. Physiol.*, 1915, 37, p. 378.

16. Tuttle, W. W., "The Effects of Exercise of Graded Intensity on the Leukocyte Count," *Research Quarterly Supplement*, Oct., 1935, 6, pp. 37-45.

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The increased manufacturing cost has forced us to raise the price of these binders to 30 cents each. However, all those orders in our possession will be filled at the old rate of 25 cents each.

ATHLETIC JOURNAL
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tions which quicken the responses enable a large volume of impulses to flow, not only to the skeletal muscles, but also to the circulatory system and to other organs. The adrenalin also affects the coordination and the stimulation of impulses which pass from the brain along the sympathetic system. It has been proved that the flow of adrenalin to the mentioned parts is spasmodic rather than continuous.[17] There is little doubt that the greater concentration of adrenalin in the blood will tend to increase the rate and the contractile power of the heart, and thus this concentration will cause a rise in arterial pressure. The smooth muscles of the gastro-intestinal tract are constricted, and the irritability of the skeletal muscles is increased. Moreover, the adrenal concentration may contribute effectively to the improvement of the supply of oxygen to the brain. The impulses which stimulate the adrenal glands come to them by way of the splanchnic nerves.

Gould and Dye[18] indicate that the sympathetic adrenal mechanism serves to call forth:

(1) a better distribution of blood to the active muscles, nerve centers, heart, and lungs with an increased oxygen-carrying capacity of the blood through an increase in the number of red corpuscles, (2) a better mobilization of sugar for the energy needs of the muscles and probably other tissues, (3) an increased irritability, contractibility, and power of the muscles, (4) a greater capacity of the muscles to tolerate and dispose of their metabolites and the removal of fatigue, (5) an increased power and efficiency of the heart, and (6) diminished respiratory and cardiac distress.

The above facts have no significance to warming up unless there is a presence of conditions which will augment the secretion of the adrenals during the warming-up period.

(Concluded in March issue)

17. Cannon, W. B., and Britton, W. W., "The Influence of Motion on Medulli-adrenal Secretion," *Am. Jour. of Physiol.*, 1927, 79, p. 433.
18. Gould, A. G., and Dye., Joseph A., ***Exercise and Its Physiology***, A. S. Barnes and Company, New York, 1935, pp. 403-404.

What the Schools Are Doing

(Continued from page 5)

tend to set up a course for civilian defense physical fitness leaders. We are going to try to give them a course which will permit them to go out into the field of civilian work and do the tasks that will be required of them.

An All-Out for Iowa

Dr. C. H. McCloy of the State University of Iowa reported a new all-out for physical fitness in the state of Iowa.

The plan in brief is to hold a training institute in Des Moines for men and women physical director leaders from each of the six state districts. These men and women will conduct a series of institutes in their districts to which every teacher of physical education for boys and girls in the high schools will be invited. These trained instructors will return to their communities to put the program in operation. Both boys and girls are to be trained but are being given instructions separately, for as Dr. McCloy stated, these boys are being trained to make good soldiers.

The Program at Evansville, Indiana
By John Wilson
Supervisor of Physical Education

The work in the required physical education classes will be divided into four phases. First, the boys will be taught certain military commands and procedures that will also be useful in the conduct of the physical education class. Second, they will be given mass exercises designed to build them physically, copied after the conditioning drills used by football coaches. Third, they will be taught defense and combat skills involving running, jumping, climbing and throwing. Fourth, the fundamental skills of the sports used in the intra and interclass and interscholastic programs will be arranged into drill situations, suitable for class activity and taught to every boy.

Our interscholastic athletic program is to be expanded. In addition to the program we have always had (varsity football, basketball, baseball, track and field, tennis and golf) each class, that is, the freshmen, sophomore, junior, and senior will have representative teams in touch football, speed ball, basketball, volley ball, soft ball, and track and field and will play an interscholastic schedule with the class teams of our other high schools. Archery, golf, tennis, bowling, badminton, swimming, table tennis, wrestling and boxing will become a part of this class interscholastic program as soon as facilities will permit.

Program Followed at Brooklyn College
Brooklyn, N. Y.
By Dr. F. W. Maroney
Chairman, Department of Hygiene

All students in required courses (some 2,000) now have as a part of the regular program the essentials of first aid including bandaging, carries, and respiration. Hundreds of our upper classmen who do not take the required program have en-

listed for military hygiene including marching and physical fitness exercises. The program is rigorous in nature and its purpose is to put our students in top physical condition as soon as possible.

The instructors in the hygiene department including athletic coaches have volunteered their services as teachers and coaches for Saturday and Sunday programs in the gymnasium and on the athletic field for men in the fire department auxiliary corps and the air warden units of the community.

The Contribution of Sandlot Sports

By Joe Tomlin

Founder of the Pop Warner Football and the Connie Mack Baseball Conferences

Your editorial in the January 1942 issue of the ATHLETIC JOURNAL, "Why not an American Battalion of Football Stars? They are the Fightingest Men We Have," brings to my attention the sandlot football of Philadelphia's Pop Warner Football Conference.

Last fall the Warner Conference signed up fifteen hundred players representing fifty-six clubs. Since the season closed, December 1, 1941, over eight hundred of these men have enlisted with the United States army, navy and marine corps. By the end of this month another two hundred will enlist.

Here's a record that schools and colleges may well aim for. These boys from the city's sidewalks, mills and factories, have set an example our campus heroes might well copy.

Sandlot players of our community clubs get little of the glory and limelight directed toward our college and high school athletes, but when it comes to the showdown of a national emergency, the first to serve are the unknowns from the streets.

We approve your campaign for all-out physical training programs in schools and colleges. But why not some of the same benefits for the nation's sandlotters—today's soldier in the front-line trenches.

Hickman High School, Columbia, Mo.

By Woody Hatfield

Director of Athletics

1. Increased emphasis in time. We now have boys physical education three times weekly instead of two.
2. We have established a noon-hour recreation program.
3. We have increased the size of our football, basketball, and track squads, adding B schedules.
4. We have set aside more time for intramurals.
5. We have introduced thorough units in defensive sports of boxing and wrestling.
6. We have formed a closer co-operation with our City Recreation Commission in the use of facilities.

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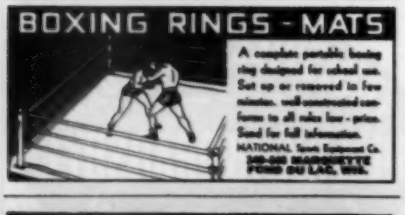

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9. We are putting emphasis on conditioning in each activity, including vigorous calisthenic drill for about ten minutes of each class period.

Lodi, New Jersey, High School
By Stanley Piela, Athletic Director

We are definitely aware of the challenge that American democracy is facing in the present crisis. The spirit of our students, mostly from European born parents, is one hundred per cent for supporting President Roosevelt in all his endeavors.

Our physical education program will instruct our students in first aid, air raid alarms, etc. Our gymnasium classes will have less play and more work to build our growing manhood to meet any emergency.

Lodi High School deeply appreciates writing you on what we are doing to meet this challenge and gladly will assist in any plan you have in mind to defeat our enemies.

A Program of Mass Boxing

(Continued from page 13)

Counter-punching: Counter-punching is the ability to hit a man who is coming toward you. A man can hold his ground and counter-punch immediately, or he may slip back and execute a delayed counter-punch.

The first technique to use in immediate counter-punching is to beat a man to the blow with a left jab. Only men with confidence and a keen reaction time can successfully use this drill. Regardless of whether boxer Black leads with a telegraphed jab, hook or right hand, boxer White slips in fast with a rapid, straight left jab to the head. He should protect his chin with his right hand at the same time. This is one of the most effective skills of boxing and it is most difficult to compete against. If a man can successfully beat his opponent to the punch, he will usually put him off balance thus putting himself in an excellent position to follow up with a sustained attack.

Illustrations 16-22 show counter moves a man may use, when his opponent has led with a telegraphed left jab.

Slips and ducks are variations of immediate counter-punching. Another skill that may be used in immediate counter-punching is that of boxer White rolling from Black's right-hand lead and countering with a right hand to Black's head. The right-hand lead of Black is blocked and deflected by White's shoulder. (Illustration 23.)

Delayed counter-punching may be used successfully for either right or left-hand leads. It is imperative that the proper retreat be used or a man will place himself off balance and White will be in a good position to counter-punch. (Illustrations 23, 24 and 25.)

For Black's looping right-hand lead, White may step back and counter with a right upper-cut, or he may block Black's right with his left and counter with a right upper-cut. (Illustration 26.)

Still another maneuver that may be used against Black's right-hand lead is shown in Illustration 27.

A Suggestion for Staging Dual Meets

(Continued from page 7)

originality of the idea as we understand something like this has been used in California. Because we are interested in anything which might help create more interest we pass it on, hoping someone may improve the idea further.

A Suggested Time Schedule

4:00, Shot Put (The event was held directly in front of the stands. Contestants warmed up in the practice ring. Each putter was announced as he made his try; his name was given and the distance. Each was limited to four tries).
4:15, Mile Run
4.25, 440-yard Run
4:30, Discus Throw (This event was staged the same as the shot put. Colored markers were used for each thrower so that measuring was eliminated until the completion of the event.
4:45, 100-yard Dash
4:50, 120-yard High Hurdles
4:55, 880-yard Run
5:00, Broad Jump (Jumpers were limited to four jumps each. In our meet this event proved very exciting as the three place winners were within 1½ inches of the winning jump 23′ 1¼″).
5:15, 220-yard Dash
5:20, 220-yard Low Hurdles
5:30, Javelin Throw (Contested same as the discus)
5:45, Mile Relay

The high jump and pole vault started at four o'clock. Our announcer, using a public address system, called attention to these events whenever possible.

We kept our field absolutely clear, and had it well marked for all field events, so

that spectators could tell at a glance the approximate distance achieved by each competitor. Fewer officials than usual were necessary as the same group could handle each of the field events, with the exception of the high jump and pole vault. In order to speed up the meet, we eliminated the two-mile run from the program and allowed more than the customary three men to compete in the mile. It is our feeling that, unless this event is likely to be very closely contested, it requires too much time and is not interesting enough to warrant a place in the dual-meet program.

In this particular meet we were able to start the mile relay on scheduled time. Incidentally, the score was tied at this time. We got off schedule a few minutes during the discus throw. Had we measured the throws during the running of the next track event the delay here might have been eliminated. The co-operation of the athletes is necessary. Both coaches had carefully instructed their boys, and in all events the boys were ready and took their turns without the usual delays. The elimination of the preliminary trials in the field events did not prove a hardship to the athletes, as in all cases they equalled or exceeded previous performances. We feel that better performances may be expected, if the athlete knows attention is being focused on his effort.

We are convinced that Track and Field can be made interesting to the public and we are happy to pass this idea on. No doubt, further improvements may be made and it is our belief that the track coaches should ever be on the alert for chances to improve their sport, if interest is to be maintained.

About Fencing

(Continued from page 7)

given very detailed descriptions of competitions (jousts) in which the skill of handling weapons played an important part. The weapons and the armor of that day were heavy and clumsy and called mainly for physical power in their manipulation.

The fact that custom, as established by these Germanic tribes, made the setting of disputes with the sword (trial by combat) law, and credited the winner as having won his case by divine judgment, there developed, of course, a demand for more and more skill in handling this weapon. When finally the habit of dueling (settling disputes with the sword) gained such proportions that the death rate among the upper classes (only gentlemen carried swords) became alarming, King Henry I of France issued a decree forbidding dueling on certain days, and finally, most rulers established edicts forbidding duels under penalty of degradation of rank and family dishonor.

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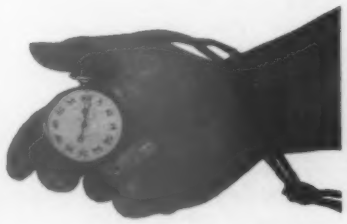

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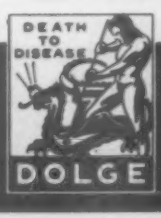

It might be mentioned here that after the Lanistae we find little record concerning fencing masters until we reach the XIV century. Here we find noted that men traveled about offering to teach "tricks" they personally had developed. They wore little round shields and, by clanging their swords on these bucklers, they proclaimed their presence. This earned them the name swashbuckler.

In Germany, at this time, we find a fencing masters' guild, thus making a profession of this activity. The first attempt to put in writing a method of use of the sword came from the hands of a German master Lichtenauer in 1348, followed closely by another work *Flos Duelatorum* by an Italian Fiore dei Liberi in 1410. Both treatises dealt with the crude form of combat of the XIV century. In Spain, Diego de Valera wrote *Treatise on Arms* in 1458 which is considered by some as the work that gave birth to scientific fencing. A manual which treated the use of the sword in a logical manner was that of Achille Marozzo entitled "Il Duello" published in 1517. Irrespective of which came first and from what nation, the fact most important is that with these works came more thought on the subject in various sections on the continent and the development of fencing technique made progress. Agrippa and Vaggiani published manuals in which they emphasized the use of the point rather than the edge. The weapon itself underwent changes both in weight and form. Schools of fencing were established in Italy under the leadership of such well-known men as Agrippa, Marozzo, Grassi, and Vaggiani, whose pupils spread throughout the continent and England establishing similar schools. This may be considered as the real beginning of scientific fencing, the foundation of our modern use of the sword. The cutting edge was revived through the development of a special weapon called the sabre. In France a practice weapon lighter than the rapier (dueling sword) was designed called fleuret (foil), and a special system of its use developed which was primarily intended for instruction and practice purposes. It was a very simple implement consisting of a rectangular blade about three feet long with the simple figure-eight guard, a plain handle and a nut (pommel) to hold the assemblage together. It emphasized dexterous manipulation of the blade by use of the fingers termed doitage, calling for subtlety instead of strength. This method has become known as the French school in contrast to the Italian school which depends a great deal upon vigor and strength for its success. Today, of course, the two schools are no longer as distinct from one another inasmuch as each has taken on from the other its advantages. Although I would hardly dare to say that a new school exists, I am safe in stating that we are steadily approaching one in this country.

Back in the time when the foil was designed, we note that the exclusive use of the sword was for offense; the defensive work was accomplished by dodging and by such auxiliaries as a shield, a cloak, a metal glove and a dagger. These disappeared and the weapon took on both departments of combat—offense as well as defense. More and more, science and skill replaced strength. The invention of gunpowder and weapons for its use decreased the effective use of the sword and gradually reduced it to a mere adjunct for in-fighting. Finally it was used to designate rank in military circles, and at the present we find that its chief use is in the sport of fencing. With this historical background which gives us a sport born from a very serious combat activity, we find that, in spite of its lost function, it provides us with a very enjoyable medium of self expression and recreation.

Fencing came to the United States with the thousands that flocked to this country in the middle of the XIX century. The purge of liberals in Germany in the year 1848 brought to these shores a group of people, educated to the values of physical activity both as a conditioner, and as a recreational medium. They brought with them the idea of organizing clubs known as Turnvereins, and quickly went about establishing such clubs in the various cities in which they settled. Based on the slogan "Mens Sana In Corpore Sano," these clubs not only practiced gymnastics, track and field, but had sections in the club which participated in debating, singing, art and literary work. It was at the New York Turnverein in 1851 under the leadership of Franz Siegel who later became general in the Union Army of the Civil War, that fencing had its birth in this country. There are records of national competitive festivals which these clubs organized as far back as 1853. Competitions in the various activities, including fencing, were held. For example: "The New York Turnverein sponsored the Seventh National Festival which was marked with good success. Charles Bothner won first place in gymnastics, George Heintz (later coach of fencing at Annapolis) won the fencing, E. Mueller won a prize for his literary efforts, and the singing section won first prize for its choral work."

Illustration 1.

Records indicate that the Boston Fencers Club, the New York Fencers Club, the New York Athletic Club, the Racquet and Tennis Club, and the Philadelphia Fencing and Sparring Club, all were organized between 1875 and 1883; and that Harvard and Columbia had groups of fencers around 1885. In 1894 the Intercollegiate Fencing Association was organized by these two colleges who competed for the championship with foils alone. Three years previously (1891) the Amateur Fencers League of America was organized to govern the competitive fencing. The first cup known as the A.F.L.A. Cup was presented by the Central Turnverein and was permanently won by the New York Athletic Club team in 1895. The individual competition which started in 1892, and was considered of national scope, contained names which held prominence in this sport for a long time. W. Scott O'Connor, Dr. B. F. O'Connor, Charles Bothner who won ten first places, seven second places and eight third places up to, and including, 1905 in which year he was still able to win the foil championship, Chas. Tatham, R. O. Haubold, John Allaire and A. H. Howard. We find the championships rotating among the groups representing chiefly the Fencers Club, the New York A.C. and the Turnverein of New York up to 1906. From then on, another group took over up to the first World War; in the past twenty years a new group held sway in the championships. The East still holds the dominant position in this sport. Indications, however, exist that fencing has spread throughout the country very fast during the past ten years.

Up until recently most of the teachers were importations from the continent. The names of J. Bonnafous (Philadelphia), George Heintz (Navy), James Murray (Columbia) and Charles Koch (N. Y. Turnverein) were the only American trained teachers. Even to this day the transition from this condition seems to be a very slow one. No doubt the future can look forward to an increasing number of our amateurs, particularly those who take up physical education as a profession, contributing to the further development and growth of this fine sport.

Regarding fencing in the colleges, the Intercollegiate Fencing Association gradually added various weapons as part of its competitive program. Until 1914 the foil was the only weapon used in championships. From 1914 to 1920 an individual sabre championship was included. In 1920 an individual epee (dueling sword) championship was added; in 1922 a team championship in sabre was included; the following year the epee and the three-weapon championships were added. This association stood alone in the field until recently, when in various other sections of the country colleges have formed similar groups.

On the scholastic side historical data is not available. The writer feels, however, quite certain that one of the first organized efforts to take place was that of the Public Schools Athletic League of New York City in including fencing in its list in 1931. The first annual tournament had twelve schools competing in a round-robin dual-meet series. In the first few years a team consisted of three boys which later was doubled in order to give more boys an opportunity to compete and enjoy the sport. The six are divided into three groups of two each fencing a round robin within each group. This increase also placed the sport on a level with some of the other sports and took it out of the so-called aristocratic classification of the chosen few. This experiment has enjoyed marked success and I feel that this popularization has had a beneficial effect on the growth of the sport at large. The press gave this competition which took place over a period of ten to twelve weeks on successive Saturday mornings in a centralized place, headline publicity which no doubt had the desirable result of creating further interest.

There is no doubt that it is the fencing in the secondary schools and its spread to the colleges through the high school graduates entering them which will ultimately bring about a growth in this sport similar to that in tennis. In all respects fencing is on a par with tennis and between the two, one will find it most pleasurable to keep physically fit at most any age level. Fencing has the qualities which make it most satisfying in the way of being a medium for self expression. It calls for skill, agility, endurance, judgment, speed (mental and physical), precision, co-ordination, alertness, and being a combat activity with the elements of cunning, deception, analysis and decision essential to its success, with fast and ever-changing situations calling for a constant matching of wits, this sport stands high in the scale of carry-over values for life's conduct. Since at present and no doubt in the distant future our material security will call forth all man power ready to assume the responsibilities of military organization, fencing should with all its inherent qualities of physical and

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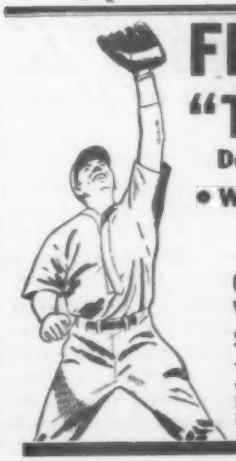

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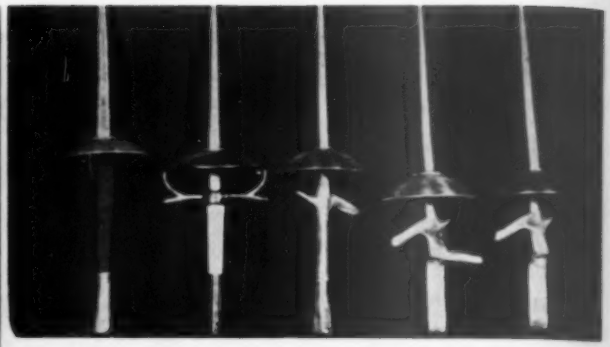
Illustration 2.



French Italian Spanish Belgian American

Illustration 6.

mental conditioning give our youth a splendid preparation for further training in the art of defense.

Just a brief description of a few essential points. Illustration 1 shows a young man on the way to his Salle d'Armes (Fencing Club). In the bag slung over his shoulder he carries all the equipment needed to participate in an evening of all-around (three weapon) fencing. In Illustration 2 you see the equipment laid out and in Illustration 3 the three weapons, sabre, foil and epee (dueling sword). Foil fencing is governed by the conventionality that every attack must be defended (parried) before a counter-attack can be executed. This exchange of attack and defense continues, until one of the fencers reaches his target before it is successfully defended. This target is very limited and is shown by the dark portion of the torso Illustrations 4 and 5, from the neck below the chin to a line drawn across the hip bones; in scholastic, collegiate and A.F.L.A. competition the groin line is included. Touches made with the point only arriving at right angles to the target are valid. This, together with the small target calls for precision of movement executed with lightning speed and, of course, at the right time. Five touches constitute a victory. The weapon has a variety of grips as shown in Illustration 6.

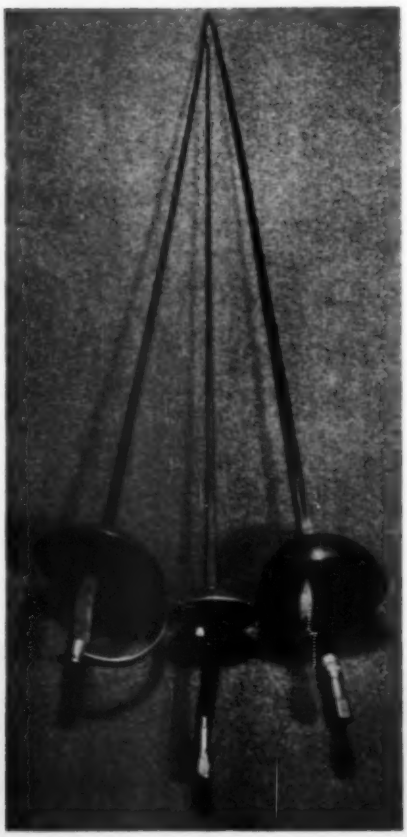


Illustration 3.

The epee is a heavier weapon, handled generally much like the foil with the exception that, first of all, no conventionality or movements are called for (no right of way). Inasmuch as every part of the body is a valid target, and that inasmuch as lack of caution may result in a touch on the weapon bearing forearm, this arm is extended from three-quarter to seven-eighths full. With this weapon a bout may be concluded by a single touch or in some competitions the three-touch system is used. Since it matters only whose touch has arrived cleanly, to facilitate judging, an electrical device has been constructed which registers a touch made by the triple-pronged point (point d'arret).

The sabre work reverts to the conventionality of the foil as regards right of way, but permits both cutting and thrusting. The target consists of the torso from the hip up to, and including, the head and both arms.

To go any further than the above historical sketch with but an introduction to the sport would call for many more pages and illustrations. The writer however hopes that he has been able to create a bit of interest in this fine sport and can assure the reader that once he has learned the art of attack and defense with these weapons, he will no doubt join the host of enthusiastic followers.

Illustration 4.

Illustration 5.

Priorities on Health

We as Americans must realize that health is not only a problem of curing those that are ill, but also a problem of preventing those that are well from becoming ill. We have gone a long way in that direction through the advances of our medical profession.

We must also realize that healthy recreation and play are as important as food, sleep and even as serums. However, hand in hand with the recreation and play must go the material with which this play can be carried on, as well as the necessary protective equipment. It is because of this, that we are vitally interested in seeing athletic equipment receive a priority rating, as by so doing we are placing a priority on health.

Two very encouraging steps have been taken in this direction. The first, of course, was the President's fine statement regarding baseball. The second is in the form of an announcement just received from the Office of Production Management. Because business concerns have had a priority rating for the maintenance of plant and factory equipment, it was deemed wise that schools should have the same rating, because their athletic uniforms constituted their chief assets in the conduct of an athletic program and their repair and maintenance were essential. This, then, is to advise coach readers that all equipment sent to athletic reconditioners will bear the preference rating A-10, P-100.

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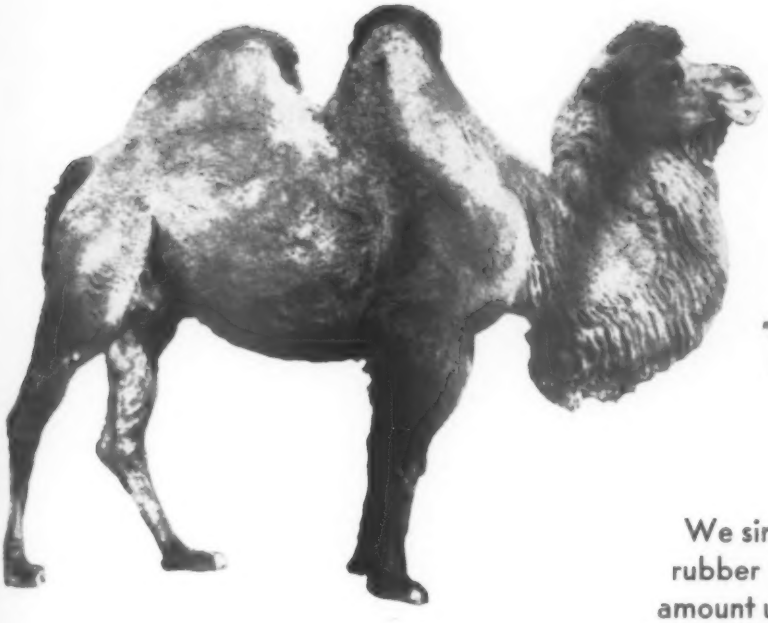

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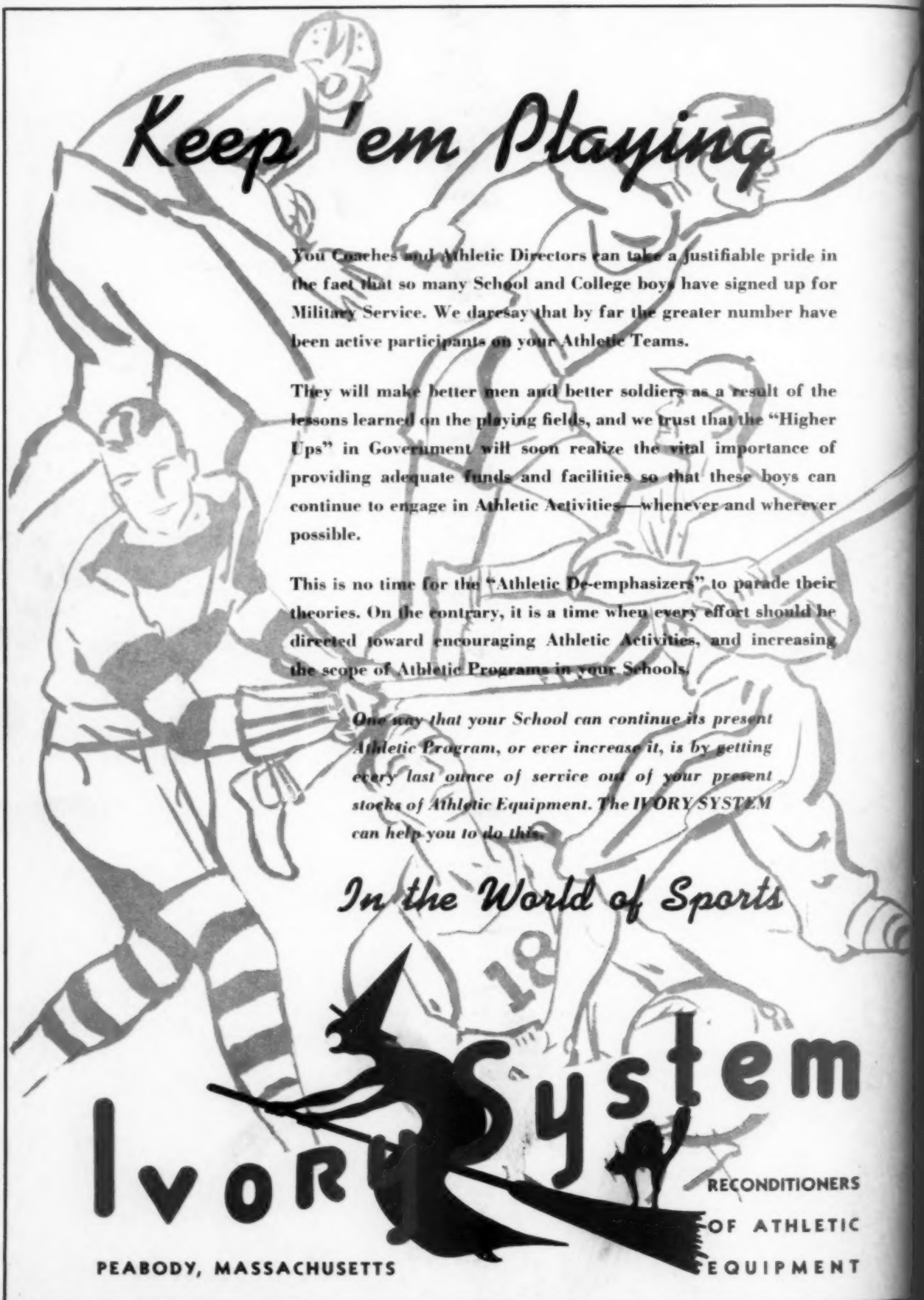

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